Factors Influencing the Vocational Decision Making
of
High-Ability Adolescent Girls

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This work is dedicated to the memory of my father
Their integrity, personal values and ethics were inspirational.
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Abstract

Factors Influencing the Vocational Decision-Making of High-Ability Adolescent Girls.

The current study is the first of its kind in Australia. It is breaking new ground therefore and is exploratory in nature. Attention is focused on the variables influencing the vocational decision-making of highly-able adolescent girls in Victoria, Australia.

This is a complex study and the design incorporates both quantitative and qualitative data collection spanning a six year period. The importance of this study lies in the research strategy of identifying and examining different educational settings and application of the findings from the first two studies (n=112) to a very specific educational setting in Study Three (n=14).

The external socializers of family, friends and the media as well as the internal dimensions of self-esteem, aspirations and interest have been investigated systematically through three interrelated but independent studies. A combination of methodologies has been employed to identify those variables that might, over time, influence the vocational decisions of these young women.

It is an accumulation of the young women’s perceptions and self-report using questionnaires, formal inventories and interviews. The data collection was progressive and the information gathering procedures included inventories of self-esteem and vocational preference, questionnaires completed by the subjects, interviews as well as anecdotal comments made by the students. Overall the analysis in this study depended on an interpretation of aggregated data employing simple frequency counts, cross tabulations and t-tests which described observations, explored relationships and identified differences between the two groups, high-ability and

control, on the variables selected. A matrix enabled a triangulation of the data, both quantitative and qualitative. The data were coded to determine constant themes and to identify important influences and trends across a time frame. Different cases were compared and patterns which emerged were then analysed.

In Study One the high-ability cohort differentiated from the controls in three major areas. These were in their aspirations, self-esteem and the relative influences of parents, especially father. Although the high-ability girls in Study Two had made vocational choices commensurate with their interests identified in the VPI these choices were by no means stable over the six-year period. Both the home and school environment were found to have impacted on these collective factors as they modified and developed vocational interest.

In Study Three the findings of the earlier studies were applied to a very specific cohort with important differences identified in the areas of self-esteem and subject choice. The environmental contexts of home and school again proved to be salient. The dissimilar contextual experiences of the high-ability cohort were found to impact on their vocational choices and their subsequent career trajectories in a different way to that of the non-gifted schoolgirl.

Based on this study, a model of vocational choice informed by the findings has been proposed.
Chapter One

Introduction

“The Australian banking industry is …less than six per cent of its senior managers and less than 25 per cent of middle managers are female. The banking culture is a tough male dominated one, despite all the lip service it pays to equal opportunity”.

This study takes place against a background of influences. Currently in Australia, 1.3 per cent of executive positions are held by women. Women indeed are getting into organisations but they are not reaching management positions. “Things have obviously changed at entrance level ..but it’s like an elephant getting into a giraffe house. It gets in the door but, once inside, they find the house is still built for giraffes and they don’t fit in”. Australian Sex Discrimination Commissioner, Ms Prue Goward, announced recently “The choice is greater..every year there are more of us in medicine, in law, in politics…there continues to be a lack of women in positions of power and decision-making …women only earn two-thirds of a man’s income and the glass ceiling is still there”. Of the top ten Victorian Certificate of Education (VCE) students who received Premier’s Awards in the year 2000, only two of them were female. Women are underrepresented in many prestigious career paths. Although it would appear that today's young gifted women do not have to make the choice between career and family to quite the same extent as did their older sisters, they still appear to be unsure, about the way they can go about planning for both (Carson, 2001; Wheeler, 2001; Wilkie, 2001).

3 Geelong Advertiser 12th September 2001
4 Victorian Board of Studies.
The causal relationship between variables related to self-concept, and the input of socialisers, in particular parents and teachers and their subsequent bearing on the vocational choices of intellectually able young women must be addressed (Walker, Reis & Leonard, 1992; Fleming, 1985; Eccles, 1986). Studies to identify the important vocational influencers are necessary to ensure that gifted young women are prepared for the challenges within the workforce.

The world outside the school is changing. A more uncertain labour market means that young people need to take increasing responsibility for their own career planning and development (Teese, 1997). Participants at the Dusseldorp skills forum in Melbourne, in July 1996, expressed the view that career guidance and education should extend beyond the school and involve the students in networks and partnerships between the school and those outside it (Teese, 1997).

It follows that career education could be described as a joint effort of the education systems and the broader community. Pressures and cultural norms experienced by young people are powerful socializing agents, shaping their judgments and value systems. So, too, are expectations for success. In the educational setting, the student’s perceptions of work and a course of study are strongly influenced by more broadly conceived social expectations (Eccles & Harold, 1992). Individuals tend to make course (subject) and career choices within a social context. Career education is aimed at assisting the individual to acquire and utilize the knowledge, skills and attitudes necessary to make work a meaningful, productive and satisfying part of his or her way of living (Fleming, 1985; Hoyt 1978). Vocational guidance for highly able students frequently is neglected in schools. Often school personnel believe that the gifted individual is sufficiently able to succeed on their own. It is recognized that gifted students cannot progress satisfactorily without adequate counselling and advice as they choose career paths (Noble, 1989).

It would appear that the career development and achievement of highly-able young women is of significance to many professionals in the field of gifted education (Kerr, 1993; Kelly, 1993). Gifted educators have become more sensitive to career development and achievement issues relating to women. Consensus is developing that
counsellors and educators should attend more carefully to the career development of the gifted girl who requires a great deal of support from career counsellors (Kelly & Collangelo, 1990). Through appropriate vocational counselling, gifted girls can achieve their full potential; that is vocations commensurate with their talents and abilities. Career counsellors must be aware of the need to counteract the indecisiveness and apparently lowered vocational goals of the gifted girl (Kerr, 1991; Kerr & Colangelo, 1990). Issues relating to the educational and career goals of gifted young people, especially females, suggest that the career aspirations of many gifted girls are compromised and downgraded as they progress through senior high school. Young women may achieve academically while at school but school achievement does not necessarily translate into career achievement. These concerns have been addressed by eminent researchers (Eccles, 1986; Fleming, 1991; Hollinger & Fleming, 1992; Hoyt, 1978; Kelly, 1993; Kerr, 1985; 1991; 1997; Silverman, 1986; Yewchuk & Chatterton, 1989). In addition, studies by Kerr, (1985; 1990) and Eccles, (1985) suggest that gifted women do not participate in high status careers to the same extent as gifted boys.

The processes that influence the development of sex differences in the education and vocational choices of gifted individuals is of particular relevance to the kinds of career decisions the gifted and talented make. These influences can be viewed in the light of the multipotentiality of gifted young people and the multiple demands made on them. The identified complexities inherent in the life and vocational development process for gifted young women are considerable. The student who is highly able is confronted with an abundance of options. Multiple goals held by the young woman with multiple talents can lead to conflict and difficulty in setting specific and challenging goals (Crane, Hattie & Houghton, 1997). Confusion is experienced by gifted adolescents who often are intolerant of ambiguity (Buescher, 1985). The anxiety created by too many options creates problems for the family as well as the gifted young person when vocational decisions eventually are made.

Gifted students show less stability in their interest patterns. The literature suggests that the career development of highly able females may be more complex, reflecting indecision and abrupt change in vocational decisions. This vocational
behaviour is uncharacteristic of their male peers however (Kaufmann, 1981). In order to facilitate the active participation of all gifted young women in a dynamic society, research into the factors that influence career decisions is essential (Eccles, 1985; Fleming, 1985; Hollinger, 1991; Walker, Reis, & Leonard, 1992).

The interrelatedness of career decisions and choices, encompass the nature and extent of both internal and external barriers to vocational choice. The realities of life spheres during adolescence tend to compromise young women. They may dismiss their inner feelings and aspirations in order to conform to the socially acceptable norms of how a woman should behave. Young women may even attempt to hide their abilities. This is of particular relevance to gifted young women where there is a dichotomy between persevering with their former high vocational dreams and aspirations, or pragmatism, where they lower their sights in order to conform to what is seen as being appropriate for them (Kerr, 1991; Gross, 1993a). The young woman is exhorted to achieve, but conversely she is under constant pressure to be feminine and acquiescent. She is discouraged from achieving too much. The high-ability young woman receives contradictory messages between “compassion and autonomy” and “virtue and power” (Gilligan, 1977).

Studies designed to assess the relationship between variables relevant to self-concept and actual educational and vocational choices are identified as being of importance (Eccles, 1986; Gilligan, 1977; Hollinger, 1991; Hoyt, 1978; Kerr & Colangelo, 1985). Eccles and her colleagues studied the motivational and social factors that influence long term and short range achievement goals and behaviours of gifted students. The study links vocational and other achievement related choices directly to two factors: the individuals’ expectations for success (self-efficacy) and the importance or value the individual attaches to the various options that she perceives as being available (Eccles, 1985).

Eccles and her colleagues proposed a model of achievement related choices. The model links educational, vocational and other achievement related choices to two factors: the individual’s expectations for success, (self-efficacy), and the importance or value that is perceived as being available. In this the the input of socialisers,
primarily parents and teachers, gender role beliefs, self-concept and self-efficacy interact. In turn, these motivational and social factors influence goals and behaviours such as vocational aspirations and choice (Eccles, 1985).

Expectations for success and confidence in one’s abilities are important determinants of vocational choice. Young people choose courses and occupations in which they believe they will have success. Studies suggest that a majority of gifted students expressed a need for help in exploring and establishing these occupational goals (Kerr & Colangelo, 1990).

**History of gifted education in Australia**

Provision for the education of gifted children in Victoria has been politically driven. In the nineteenth century, Victorian schools catered either for academically or vocationally inclined students in separate settings. Entry to secondary education depended on passing a competitive examination at the end of primary school. In 1872, Government secondary schools were established in all Australian states. At that time in Australia, education became free, secular and compulsory. In the latter half of the 20th century most states increased the minimum school leaving age from fourteen to fifteen or sixteen years. So that all children would benefit from the extra time at school, students of the same age were kept together in the same grade regardless of ability. At the same time, any entrance requirements for secondary education were abandoned.

Traditionally, Australian society, and no less its teachers, have prided themselves on being egalitarian and “anti-elitist”. In a move designed to end perceived privilege and to promote equality, Victoria abandoned selective state schools, streaming practices and special classes for the higher achieving students. In 1957 they were replaced by comprehensive primary and secondary schools based on the new English school system, which were deemed to cater for all children in the local neighbourhood. Such schools were designed to cater for children with a wide range of abilities.
Because there were insufficient numbers of trained and competent teachers to cope with the large school population increase due to the post-war baby boom and migration intake, societal pressures to meet the needs of disadvantaged and physically and intellectually disabled students were highlighted by the Commonwealth Schools Commission in 1973.

This move towards a notion of social justice introduced heterogeneous grouping patterns and emphasised the needs of average and below average students in the Victorian education system. The egalitarian belief was that provision should not be made for able students because of the more pressing needs of more visibly disadvantaged groups. In tandem with that belief the state education departments and teacher unions of the day subscribed to the popular myth that gifted. Individual differences were not recognised to be anything more than a function of socio-economic status, ethnicity and gender. Thus “an educational philosophy in which social factors are sometimes considered more important than other factors” was fostered (Braggett, 1986, p. 15).

Any modification of this policy has not been accomplished easily. Even though there were two selective high schools within the Victorian system, selecting students on the basis of intelligence and performance and providing for them as a discrete cohort does not sit easily with the Australian concept of egalitarianism and dislike of elitism. This is not true for children with physical gifts, especially those who excel in popular sports. The Australian Institute of Sport and the College of the Arts have been established to develop the talents of physically and artistically gifted people. Such settings for children with outstanding potential or giftedness in the areas of art, music, dance or sport were not considered to be elitist however.

As early as 1975, the need for research into giftedness in Australia was identified by a Schools’ Commission report. Mr T J Ford, the Director of Secondary Education responded to the challenge and sent an Inspector of Schools, Mrs Pat Waller to the first world conference for the gifted, in London in 1995. Her confirmation of the needs of these children resulted in Ford introducing a Gifted Children’s Task Force. Messrs T Commerford and K Creed were appointed to the

task force and with Mr Ford’s ongoing support established the Accelerated Learning Program at University High School. The Victorian Association for Gifted and Talented Children (VAGTC) with Ms. Ev Tindale, Deputy Head of Presbyterian Ladies’ College (PLC) in Melbourne Victoria, as President, was also established.

The objectives of the Task Force and the Gifted Children Committee was to raise school and community awareness to the needs of highly-able children and to develop appropriate compacted curriculum and resource material.

In 1983 Australia held its first national conference on gifted and talented children in Melbourne, Victoria. Funding for the three-day conference was through a $11000 grant from the Special Projects Program of the Commonwealth Schools Commission. Although the Federal Minister for Education declined to attend, Mr Kim Beazely Snr., a retired federal minister, did attend. No current politician or Government representative for the host state, Victoria was present.

The impact of a Socialist Left ideology in the Victorian Government actively discouraged any form of identification of, or provisions for, intellectually gifted students within the Government school system. Conversely, Victorian schools were extremely responsive to the philosophy of equality. At this time the only acceptable differentiation within the Government school system was for intellectually disadvantaged students.

Despite achieving tangible results, the Task Force and Gifted Children Committee was disbanded in 1984. The concept of egalitarianism has proven to be of paramount importance and fostering excellence consistently treated with some suspicion. The notion of special provisions for one stratum of society, in this case the intellectually talented, is not well understood and continues to be treated with a degree of hostility within the community as a whole.

Currently in Victoria there are 16025 government schools and 695 non-government or independent schools. Education in government schools is virtually

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free. Independent schools charge fees. In the large public (private) schools the fees are considerable. It is indicative of parental concerns that many bright students are educated in independent schools.

A Senate Select Committee Report in 1989 made unanimous recommendations for the education of the Gifted and Talented in Australian schools. In the same year the Federal Labour government vetoed all Senate Select Committee recommendations and approved funding of a House of Representatives initiative on the sporting gifted, “Going for Gold”. It was not until the “Bright Future’s Policy” was initiated by the Victorian Department of Education under a Liberal Government in 1995, that specific planning for the education for intellectually gifted children was actively encouraged in the schools. This policy was a watershed in the history of gifted education in Victoria. It gave formal Government recognition to the needs of gifted students by outlining a range of strategies aimed to provide appropriate educational experiences for gifted students in Government schools. In November 2000 the Employment, Workplace Relations, Small Business and Education Legislation Committee within the Australian Commonwealth Liberal Government called for submissions regarding the education of gifted student in Australian Schools. The inquiry will investigate the Commonwealth’s role in the development of current programs and policies for gifted children. Recommendations emanating from this inquiry are to be made public in late 2001.

Characteristics of the Australian tertiary system.

Within the Australian university system undergraduate degrees tend to reflect a vocational component unlike the US undergraduate degrees or ‘college years’ which are generalist in nature. In the US students can elect to declare a major study prior to college or enter as “undecided”. Of the students who go on to four-year institutions to obtain their bachelor’s degree approximately half select each option (Johnson, 2001).

Young people in Australian schools however are required to make important vocational decisions in the later years of high school. The adolescent years are
characterized by considerable biological and developmental changes. Relationships are inter-linked and interdependent within the social environment. During this time Australian students are encouraged by their schools and parents to select a specific tertiary course of study or vocational discipline. These decisions are made therefore while adolescent students are confronted with other considerations.

**Career advice within the Australian (Victorian) school system.**

The people occupying the position of career advisor in Australian secondary schools have an extremely diverse range of backgrounds. Career advisors possess either formal and/or informal qualifications. The people in this position employed by the secondary school, may hold undergraduate degrees in teaching plus post graduate diplomas in counselling. Career advisors may also hold degrees in social work or psychology. In addition to this, short informal courses and training for career advisors are offered by the Career Education Association of Victoria (CEAV). Within initial teacher training institutions, the education of the gifted is addressed briefly, if at all. Some post graduate qualifications in Special Education include a unit on gifted students. The University of New South Wales however does offer a Graduate Certificate of Gifted Education under the direction of Professor Miraca Gross. There is no evidence that secondary trained career teachers have any specialised understanding of the needs of high potential students.

The career industry has developed a number of instruments with which to advise young people about their vocational trajectory. The Vocational Preference Inventory (Holland, 1985a) is a well respected measurement. The VPI. scales of Realistic, Investigative, Artistic, Social, Enterprising and Conventional incorporate the main dimensions found in most interest inventories. The eleven category scheme assesses the personality and occupational type in a theory of careers. This measurement was used in order to identify vocational interest in the current investigation.

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6 Throughout the text Holland codes will be in italics.

Identification of gifted for the purpose of this study.

Outstanding individual achievement demonstrates the existence of giftedness, but the concept itself is difficult to describe or define. Some young people appear to achieve in one area only, while others are accomplished in many domains. Others may have specific talents in the intellectual spheres, in the visual or performing arts, in the psychomotor area, in leadership, or social skills. Secondary school students are often identified as being gifted because they are high achievers in academic subjects at school. In 1994, the population from which many of the students in the current study were drawn were being educated in Victorian government schools. These schools were not encouraged to foster intellectual giftedness. Australia is not a test oriented society. Schools are often reluctant to administer intelligence tests. The Victorian school principals who responded to the author’s request for participants to take part in the current investigation, demonstrated a concern for, and a belief that, they should be catering for their “able” students. This was at a time when it was politically unpopular for them to do so. It must be appreciated that not all of the students within the sample group in this study were identified as being intellectually gifted on a standardised psychometric measure. They were identified by their schools as ‘gifted’ because they were highly-able, academic achievers.

The current study is the first Australian study to attempt to identify the variables that influence the vocational decision-making of highly-able adolescent girls. It is therefore exploratory in its aims and hypotheses. It is important to recognise that a review of the literature has indicated that much of what has been written is retrospective and/or anecdotal and based on biographies of eminent and/or successful women. Examples of these approaches are the important investigations of Cox, (1996), Kaufmann (1981), Kerr (1991), Rimm (2000), Silverman (1991), Tomlinson-Keasey & Little (1990), and Wilson (1994).

Eccles, (1985) wished to focus attention on those variables that are amenable to intervention so that highly-able adolescent females can make informed vocational decisions in terms of their personal development and future financial autonomy.
The current study seeks to address Holland’s position, that interest is an important determinant to vocational decision-making. Holland’s suggested topics for further study in the areas of gender, intelligence and the workplace have been addressed. The workplace, in this particular instance, is the school. This investigation examines the wider social influencers of family, friends, media and society in general. These variables are explored in relation to the internal dimensions of aspiration and self-esteem.

Using a combination of qualitative and quantitative methodologies spanning a six year period, the variables that influence the vocational decision-making of highly-able adolescent girls have been examined systematically through three interrelated studies. Study One is quantitative in nature. High-ability adolescent girls from Grades 10, 11 and 12 in Victorian government, independent (private) single-sex and co-educational schools were selected by their schools to take part in the current investigation. The same schools randomly selected a similar number of average ability classmates of the highly-able cohort to act as a control group. Data collection for this study spanned three years.

Study Two is an extension of Study One. The data collection took place three years post Study One. It seeks to address change in vocational direction over time. Study Two is a qualitative study which employs case-study methodology. The cohort in this investigation comprised high-ability young women exclusively. The girls all took part in the original Study One. The researcher was able to obtain their school records and contact them in regard to their involvement in the subsequent study. Study Two confirms the literature and adds new material.

Study Three is an explication of Studies One and Two. Data collection for Study Three took place in the same year as Study Two. Young women enrolled in an accelerated program for high-ability students at a single-sex school comprised the population in this qualitative study. Based on this investigation, a model of vocational choice, informed by the findings will be proposed.
Chapter Two

Introduction and Review of the Literature

The intellectual and social/emotional aspects of the gifted young person, and how these cognitive and affective attributes combine to influence and complicate development should be recognized (Buescher, 1985). Before the unique characteristics of highly-able young people can be understood fully however an understanding of general adolescent maturation is useful.

Adolescents are not a homogeneous group but a highly diversified and differentiated cohort of young people in a period of development generally accepted as spanning the ages of 12 to 25. The adolescent years are characterized by considerable biological and developmental changes. Relationships which are interlinked and interdependent within the social environment of young people facilitates insight into the influences of friends, teachers and parents on the adolescent’s developmental trajectory.

Social interactions, like biological interactions take place within a larger context. One model, that of Bronfenbrenner (1977; 1986), has characterised interaction between the individual and the environment as being in the form of an ecological system. In order to incorporate these interrelating and interactive factors into a coherent theory, he proposed a series of sophisticated scientific paradigms to examine the impact and influence of environmental dynamics on the individual Bronfenbrenner’s ecological model contributes to an understanding of the socio-cultural environment by identifying major structural systems and describing the nature of their influence on the growing child. In the Bronfenbrenner model, industrialized society is conceptualised into four external systems which affect an adolescent; the Microsystem, the Mesosystem, Exosystem and the Macrosystem (Bronfenbrenner, 1986). Within the Microsystem of the adolescent, the importance of the family is followed closely by friends and peers as well as other social groups.
within the wider community. The Microsystem is referred to by Bronfenbrenner as the “proximal level of environment” (Muus, 1996 p 322). It recognizes that although the home and the family are the principal contexts in which human development takes place, other settings or environments interact with developmental processes. For example events at home can affect a child’s progress at school (Bronfenbrenner, 1986). With the advent of time, microsystems are constantly changing. Thus the continuing development of the individual and subsequent changes in the environment affect the Microsystem.

Several Microsystems in interaction constitute the Mesosystem. The Mesosystem comprises linkages and processes that take place between two or more settings. Mesosystem interaction is seen in the multiple role participation experienced by adolescents. People play different roles as they participate in various Microsystems, for example that of son or daughter, friend, student, team player, band member, or worker. The changing roles experienced by individuals over a time continuum is crucial to Bronfenbrenner’s theory. In the case of the adolescent for example, Mesosystem interaction may be the interrelation between school home and the workplace or prospective workplace.

The structures found within the wider community comprise the Exosystem. This is referred to by Bronfenbrenner as a more “distal environmental influence” (Muuss 1996 p 327). The three Exosystems most likely to affect the developing child are firstly the relationships between the parents’ workplace, secondly the parents’ social network and thirdly the wider community. By affecting what an adolescent can or cannot do, the Exosystem may influence the quality of the Micro and Mesosystems negatively or positively. For example working conditions and salaries within the parental workplace impact on the lives of the adolescent. The media, in the form of television programs specifically targeted at the adolescent population, exerts substantial influence on the young person. That influence may be exposure of the adolescent to undesirable concepts or inhibiting positive interaction between family members.
Over time these environments impact on the adolescent by developing and nurturing social values and life expectations. Developmental science traditionally has equated the passage of time with chronological age. It has been seen as a frame of reference for studying the psychological changes in individuals as they grow older (Bronfenbrenner, 1986).

The Macrosystem consists of the fundamental social structures within a culture. It asserts a powerful but indirect influence on the individual and focuses around the trajectory of life from school entry, adolescence, entering the work force, marriage, retirement and death. A Macrosystem comprises cultural, political, social, legal, religious, economic, educational and public policy values.

The socialization agents of parents, teachers, friends and the wider community play an integral role in exercising influence over the adolescent during this period in their lives. The adolescent, in turn, influences those “influencers”. In general the peer group within the Mesosystem becomes more influential during adolescence. The adolescent looks to his or her peers for approval and a feeling of commonality (Festinger, 1954). Even the concept “peer group” however does not imply a uniform and coherent collection of adolescents. Instead it comprises a cohort of individuals highly disparate in their values, interests and attitudes (Bronfenbrenner, 1977; Muuss, 1982).

Adolescence marks a continuing trajectory of physical and emotional development. Intrinsic to this process of identity definition the adolescent confronts the inevitable questions related to financial self-reliance. These include whether or not to continue formal education beyond high school, what vocation to pursue and how to overcome obstacles which may lie in the path of accomplishing these vocational goals.

It has been suggested that ultimately social influences predispose vocational decision-making (Eccles, 1986; Hollinger & Fleming, 1992; Hollinger, 1991; Noble, 1989). Socialisation pressures and cultural norms are powerful agents which interact to modify behaviour and impose community expectations upon the adolescent. In the
educational setting, the student’s perceptions of course value are strongly influenced by more broadly conceived social expectations (Eccles & Harold, 1992). Individuals tend to make course (subject) and career choices within a social context. Consequently the choices are influenced by the surrounding social context within which the young person is embedded. This means that they choose from an array of subject possibilities which are perceived by them to be appropriate precursors to an acceptable vocation.

These issues concern adolescents in general but young women in particular are faced with special vocational issues. In contemporary society, young women must respond to societal expectations associated with career, marriage and/or childbearing. They must decide whether or not to postpone marriage and children in order to establish a career. If they marry, they need to consider whether to have children early in their vocational trajectory or indeed pursue a profession which may result in men’s negative perceptions of their social desirability (Kerr, 1997).

Career goals have been cited as reasons for choosing a particular course major (Brown & Strange, 1981). That is, the selection of a college major is analogous to vocational decision-making (Noble, 1989; Rimm, 2000; Weishaar, Green & Craighead, 1981). Success in academic subjects in school have been found to predict strongly career directions (Rimm, 2000). Naylor (1997) has observed however that although the relations between educational and vocational interests are assumed rarely are they investigated. He does suggest that measured educational and vocational preferences contain similar interest themes. Interest can be regarded an expressions of what one wants. Thus interest themes have been cited as important predictors of educational (subject) choice in addition to vocational preferences (Naylor, 1993). From this premise the current concept of “interest” or “subject selection” in vocational choice has developed.

**Theories of vocational choice.**

Theoretical perspectives associated with the vocational development of adolescents can be broadly categorised into two distinctive approaches: differentialist views and developmental views. Advocates of the differentialist perspective suggest
that vocational choices of young people are based on matching their abilities, interests and personality profiles to the demands of a particular vocational requirement (Holland, 1985b). Within the differentialist context, vocational counsellors consider the skills and attitudes of the young person in order to guide adolescents into the career which best fits their personal attributes. When determining vocational choice Holland found that success in academic subjects at school strongly predicted career directions. According to Holland the construct of interest, reflected by subject selection, appears to be an important predictor of automate vocational choice (Holland, 1985b). Both males and females assign a great deal of importance to personal interests and preferences (Strange & Rea, 1983). According to social learning theory, interest develops from satisfaction derived from fulfilling internal standards. Satisfaction in the knowledge that one has performed competently. This perceived self satisfaction is gained from performance accomplishment (Bandura, 1982; Bandura & Schunk, 1981) The construct of interest, reflected by subject selection, appears to be an important predictor of automate vocational choice (Holland 1986b).

Of relevance to this study developmental theory implies that young people between the ages of 15 and 25, whose cognitive capabilities are enhanced, appear to make more sophisticated choices. They become more cognizant of appraising their skills more realistically in relation to vocational choice and job requirements (Neisen, 1987; Super & Hall, 1978; Ginsberg, 1972). It is implied that they are more adept at evaluating their own talents and acquiring a vocational identity; or an understanding of self through one’s role within society.

In contrast to the differentialist’s view, psychologists and practitioners who endorse a developmental perspective contend that an individual’s vocational development advances as a function of maturation. It is a process of the growth trajectory (Erikson, 1968; Gottfredson, 1981; Havinghurst, 1972). The developmental view is compatible with the respected developmental stage theories where vocational maturity advances through distinguishable phases (Piaget, Erikson & Havinghurst, 1968). Hence an individual’s vocational development advances in sequential stages from childhood through adulthood. Indeed Holland’s (1986b) theory has been
criticized for its failure to recognize developmental antecedents in vocational choice. Developmental psychologists believe that an individual’s stage of development therefore is the important factor in occupational choice (Ginzberg, 1951; Super, 1957; 1969; Osipow, 1973; 1978).

An alternative focus to both developmental and differentialist theories questions the assumption that an adolescent’s aspirations or particular skills play a significant role in determining their ultimate vocation. The relevant literature suggests one’s vocational goals are primarily a reflection of such variables as childhood concepts regarding socially acceptable roles appropriate to race, sex or socio-economic class (Ginsburg, 1972; Gottfredson, 1981; Neilsen, 1997; Super, 1978).

**Fulfilment of potential theories.**

The current investigation focuses upon high-ability adolescent girls and so fulfilment of potential is an important issue. No single factor appears to account for high accomplishment however (Walberg & Zeiser, 1997). Retrospective studies such as those of Simonton (1997) try to determine why gifted people are eminent and how they have become so. The highly renowned individuals in Simonton’s histriometric study are now recognised as profoundly gifted and, as such, have limitations for purposes of the current study focussed as it is on the single evidence of perceived intellectual enhancement. It does, however, identify the family as being a significant influence in the ultimate achievement of genius in individuals.

The work of Tannenbaum (1997), Walberg and Herbig (1991), and Walberg and Zeiser (1997) offer a detailed examination of the predictive variables of fulfilment of promise as these interact. The mutuality of the educational and environmental factors, identified by Tannenbaum as well as by Walberg and his colleagues are seen to directly influence learning in childhood and adolescence. In turn, these influence talent development and possible adult eminence.

Tannenbaum (1983) clearly identifies the role of the environment in the relationship between fulfilment and potential. The five internal and external variables
that in Tannenbaum’s model “mesh into excellence” are illustrated within a starfish design. Tannenbaum identifies five interacting elements which link fulfilment and childhood potential. These are:

- superior general ability or the ‘g’ factor, usually reflected in psychometric assessments;
- special abilities and aptitudes such as musical, artistic or mathematical talent;
- experiences in the home and school, parents, teachers and peers;
- chance factors; as well as
- drive or motivation.

These variables link to influence a highly-able young person’s opportunity to enter an appropriately advanced vocational level and experience fulfilment (Tannenbaum, 1983). Tannenbaum proposes that children who have the potential to succeed as gifted adults require not only general and specific abilities but appropriate personality attributes as well. These, together with special environmental encounters combine to facilitate the emergence of talent. Tannenbaum believes that many high achieving young people fail to develop their abilities.

Walberg and Zeiser (1997) also identify achievement ability on standardized tests as a variable which influences learning and ultimate achievement. They too nominate the motivation and self-concept of the individual, together with quality of instruction (teachers), home life (parents), and the classroom environment (chance factors). Additionally their research also suggests that the peer group selected outside the school is important. So too is the exposure to mass media and to popular culture, an important variable, notably through television (Walberg & Herbig, 1991;Walberg & Zeiser, 1997; Rimm, 2000). More latterly it is argued that internet access through widespread computer use is also an important addition to the impact of mass media (Rimm, 2000)

In framing the current study which examines influencers of the vocational choices made by highly able young women, the theories of Tannenbaum and Walberg are of particular relevance. The current study proposes that the elements of general

ability, self-concept, drive and motivation as well as the educational and home environment influence vocational choice and ultimate fulfilment of potential.

**A construct of interest and the theories of Holland, Gottfredson and Bandura.**

Gottfredson (1981) proposed a theory on the development of occupational aspirations in five stages from early childhood to adolescence. She alleged that during adolescence young people tend to disregard vocational choices that they perceive as unsuitable or inappropriate for one’s sex or comfort zone. She has made the assumption that individuals seek occupations that are compatible with images of themselves and that social class, intelligence and gender are important determinants of self-concept and career aspirations. Gottfredson provided an explanation of the evolvement of occupational aspirations but Holland (1985b) proposed a model explaining the particular directions that individuals’ vocational aspirations take.

Differentialist orientations consistently imply that people’s interests and vocational choices flow from their life histories and personalities, and that satisfying career choices and achievement depend on a good fit between occupational interest and environment (Holland, 1986b; Bandura, 1997). Holland’s (1985b) approach represents an efficient means of organizing and interpreting information about people and their occupations across quite divergent social and cultural settings (Kelso, 1986).

In Holland’s (1985b) view vocational interests are an important aspect of personality. For example an introspective personality type will be less likely to select a vocation that will require him/her to extend beyond their psychological comfort zone. Holland also proposed that behavior is determined by the interaction between personality and environment. He proposed that interest inventories should be regarded as personality inventories, and that that interests, in turn, lead to the development of competencies. These then crystallize into associated values. As such they contribute to the creation of an individual who exhibits a characteristic life, style and personality (Holland, 1985; Kelso, 1986).
Each personality type is believed to be the product of a characteristic interaction among a variety of cultural and personal forces. These dictates include peers, biological heredity, parents, social class, culture and the physical environment. A child absorbs from parents a special genetic inheritance as well as specific experiences. The process may predispose an individual to embrace particular activities, and have aversions to others. Such early life experiences ensure that some activities are preferred over others. These partialities may then emerge as well-defined interests.

An important association also has been made between self-efficacy and vocational interest (Betz & Hackett, 1981; Bandura, 1997). Self-efficacy is the expectation the one has the actual ability to complete a given task or goal. According to social cognitive theory, growth of intrinsic interest is fostered through affective self-reactive and self-efficacy mechanisms (Bandura, 1997). The strength of self-efficacy will influence the amount of effort devoted to pursuing a goal (Kishor, 1981: Kelly, 1993). A high sense of efficacy promotes an expectation of success in the individual. High perceived efficacy or expectations of success amongst young people results in broader career paths and greater vocational interest (Betz & Hackett, 1981).

Holland believed that the ability to identify potentially damaging or advantageous work environments is imperative to mental health. He claimed that people search for a compatible environment that will enable them to exercise their skills and abilities to the optimum. When making vocational decisions, matching the individual’s interests with those characteristics required by specific occupations has a long tradition within psychology. This theory is often referred to as “goodness of fit (Gottfredson,1981; Holland, 1985). The concept of “best fit” an extension of “goodness of fit”, was referred to also as the “trait factor” (Kelso, 1986; Richardson, 1978).

A person’s interests and competencies combine to create a particular personal disposition that leads one to think, perceive and act in certain ways. For example
people who resemble a social type, seek out social occupations such as teachers, social workers and ministers.

The Vocational Preferences Inventory (VPI), was developed originally to assess personality however it is a well respected measurement tool used by vocational guidance counsellors. It has become an appraisal of vocational interests. The eleven category scheme assesses the personality and occupational type in a theory of careers (Holland, 1985). Its use is meant to match an individual’s personality to appropriate career options. (Holland, 1985). The VPI. scales of Realistic\textsuperscript{7}, Investigative, Artistic, Social, Enterprising and Conventional incorporate the main dimensions found in most interest inventories.

Holland’s theory is based on the assumption that most people can be categorized into one, or a combination of six personality types; Realistic, Investigative, Artistic, Social, Enterprising and Conventional (RIASEC). According to Holland, occupations represent a way of life, an environment, rather than a set of isolated work functions and skills. The RIASEC dimensions reflect six model environments. The pairing of personalities and environments, it is argued, leads to predictable outcomes which influence vocational choice. Holland proposed that individuals chose occupational fields that they perceive as compatible with images of themselves and their predominant personality type. For example, a socially aware personality may elect to become a teacher or psychologist.

Relevant to the current study is Holland’s view of the combined influence of perceived actual intelligence, or how intellectually able one believes they are, and a person’s own self personality type. Thus the premise that a combined influence of actual intelligence, self-evaluation of ability, interests and personality variables can influence and predict vocational choice is proposed (Holland, 1985).

Some recent research is contradictory however and suggests that most adolescents base their vocational decisions on considerations other than congruence between interests and skills reflected through a vocational interest inventory. Strong

\textsuperscript{7} VPI categories will be in italics throughout the document.
similarities have been found between vocational and educational interests. An Australian study found congruence between educational interest or subject selection, identified within Holland codes, and ultimate vocational choice (Naylor, 1993). These conclusions are of particular relevance to the current investigation. Interests identified by a vocational preference/interest inventory together with the considerations of both internal and external factors within the community are interlinked.

There are conflicting studies on how well Holland’s theory can be applied to gender differences. The findings of Matthews and Walsh (1987) question the generalisability of the instrument and whether it can be applied to women as well as men. One study of Holland’s theory of occupational types, personalities and interests has found an association between what is referred to as congruence and traditionality (Wolfe & Betz, 1981). Women whose vocational choices were in nontraditional fields were significantly more likely to make choices congruent with their personality type than women choosing traditional fields. Other studies have found that some groups of women were described accurately by the appropriate Holland scales and others were not. They suggest that the VPI discriminates among groups with particular patterns not always occurring within all occupational groups. A study by Harvey and Whinfield (1973) into descriptors of women’s personality styles and vocational interests found that there was strong evidence that the Investigative, Enterprising and Conventional styles did apply to women. The Realistic, Social and Artistic scales however were more ambiguous.

Lack of consistency in research findings pertaining to Holland’s theory would suggest then that it is differentially valid for dissimilar groups of women. Women who preferred traditional career fields were more likely to make choices incongruent with their personality types, that is, they were influenced by other factors. Of the 184 women in the Wolfe & Betz (1981) study, women whose choices were strongly influenced by sex-role stereotypes chose occupations traditionally considered appropriate for females, for example nurse, teacher or secretary. Women who chose non-traditional careers (53%) showed strong congruence with their Holland type of Masculine/Feminine (Wolfe & Betz, 1981). These findings seem to predict more accurately the preferences of women who have resisted the influence of socialising
agents which encourage traditional female vocational goals. Women identified by the Holland code as being more masculine personalities were also less strongly influenced by occupational stereotyping and more likely to choose non-traditional vocations (Wolfe & Betz, 1981).

In addition further studies suggest that women with androgynous qualities are more able to cope with societal pressures (Howard-Hamilton & Robinson, 1991; Lea-Wood & Clunies-Ross, 1993; Moir, A. & Jessel, D. 1991). The Howard-Hamilton Robinson study found that a high proportion of adolescent gifted girls in Governor’s schools in the USA displayed characteristics generally evident among young males. For the girls in this study the attributes of self-reliance, dominance and leadership seemed to be associated with achievement related behaviours in general and non-traditional careers in particular.

**Gifted girls and vocational choice.**

The premise that a combined influence of actual intelligence, self-evaluation of ability, interests and personality variables can influence and predict vocational choice has been proposed by Holland (1985). Career development studies reported by Kerr (1996) suggest that career interests for average students change from junior to senior high school, stabilising by age sixteen. Gifted students however show less stability in their interest patterns. The unique characteristics of highly-able students engender problems associated with vocational choices. The literature suggests that the career development of highly able females may be even more complex, reflecting indecision and abrupt change in vocational decisions (Kerr 1991b). Such a phenomenon has been attributed to the multi-potentiality of the gifted young person as young women with more than one talent may face contradictory messages as to the optimum employment of their abilities. The implications of high ability, and multi-talent on vocational selection has been seen as having a multitude of options (Kerr, 1991b; Crane, Hattie & Houghton, 1997). Because they have “an embarrassment of riches” multi-talented students can find the selection of a vocation difficult (Galbraith & Delisle, 1996 p. 96; Webb et al, 1982; Kerr, 1991b).
Multiple goals held by the young woman with multiple talents can lead to conflict and difficulty in setting specific and challenging goals (Crane, Hattie & Houghton, 1997). The highly-able young woman is told “you can be anything you want to be” (Hollinger, 1991 p135). As a result, confusion is experienced by gifted adolescents who often are intolerant of such ambiguity (Buescher, 1985). Multi-dimensional gifted girls will frequently have difficulty setting long term plans and making vocational choices (Kerr, 1983). The anxiety and vocational indecision created by too many options creates problems for the family as well as the gifted young person when the vocational decisions are eventually made. This vocational behaviour is uncharacteristic of their male peers however (Kaufmann, 1981).

Although some very focused highly-able girls seem to decide their future careers even before they enter school (Kerr 1991b), many gifted women complete high school with no idea of what vocation to study and to ultimately take up when they leave. Frequently those students who are able to make early vocational decisions are held up by their teachers as the ideal. As a result, the attention of counsellors is focused much more often on vocational anxieties than the problem of early vocational foreclosure.

A perceived need to make to make early vocational decisions may well be found to produce unsatisfactory results. Resultant anxiety and depression, together with feelings of deficiency prevail (Kerr, 1981; 1991b; Perrone,1997; Webb et al,1982). Problems may arise for the gifted individual with multi-talents who is expected and often pressured to make decisions about vocational selection in order to apply for, and accept a place in a tertiary institution. This is particularly relevant to the Australian educational system which requires young people, upon completion of high school, to make a firm career choice. The American concept of a generalist college education is not an option for young Australian women.

Early vocational commitment and the perceived pressure for high ability young women to focus on high status careers has been documented (Silverman, 1991). Gifted and talented students tend to recognize and react to the high expectations of parents, teachers, friends and society in general. Many able young
people are encouraged by their families and friends to achieve high status positions such as doctor or lawyer. Occupational stereotypes clearly suggest to the young woman that the majority of high status career options are masculine (Hollinger, 1991). The gifted girl often is encouraged by teachers and family to focus on vocational goals that are perceived to be appropriate careers commensurate with her ability (Kerr, 1981;1991; Perrone, 1997; Webb et al 1982). As a consequence she may not follow her interests and dreams believing that they are perceived as unworthy of her intellectual ability (Silverman, 1991. Certainly within the Australian workforce the majority of high status positions such as doctor and lawyer are male dominated (Clib,1996).

Consistently the personal achievement goals identified in adolescence by gifted young women have been observed as compromised and downgraded (Arnold,1998; Clark, 1988; Hollinger, 1991; Hollinger & Fleming, 1992; Hoyt & Hebeler, 1974; Kerr, 1991; Rodenstein, Pfleger & Colangelo, (1977). When she reaches adolescence, the gifted young woman is confronted with mixed societal messages initiating a process which may serve to lower her vocational ambitions. Average primary schoolgirls often have modest ambitions: ‘housewife’ ‘mother’ or ‘nurse’. Gifted girls have more lofty ideals, ‘lawyer’, ‘palaeontologist’, ‘doctor’ or ‘engineer’. By the end of their secondary schooling however many of these young women have modified their ideas and become vaguely accommodating (Kerr, 1991a). The young women in Kerr’s research for example left school full of promise (Kerr, 1996). Kerr found that many of the women had become adaptable over time-too adaptable. Ten years after graduation many of her gifted classmates had denied their giftedness and viewed themselves as self-assured and self-accepting. Most were homemakers, teachers or nurses. Twenty years after graduation Kerr’s classmates were more accepting of their giftedness. Four different categories of women could be identified within the group. Kerr found that some of her cohort had become “transforming women” (Kerr, 1996 p234). They directed their talents to the creation of appropriate careers and businesses in which they could apply their skills. A second group were committed to the traditional occupations they had originally selected, such as teaching and homemaking. Another more career oriented group were continuing to experiencing vocational successes. A fourth group of women had all but

forsaken their earlier dreams and choices as they struggled with unsupportive environments.

A study by Kaufman (1981) observed 322 highly gifted Presidential Scholars of 1964 to 1968. She found that the issue of conformity versus achievement differed markedly between boys and girls. The boys aspired to high status career-doctors, lawyers and professors. The girls however, like those in Kerr’s group tended to aspire to often poorly paid moderate status careers in business and secondary education.

A study by Card, Searle, & Abbles, (1980) supports the findings of Kerr and Kaufmann. They found that although highly able young women maintained high grades in school and started out with higher achievement potential, there was a critical shift when achievement needs were replaced by relationship needs during adolescence.

Many gifted young women find that after graduation, they are faced with having to comply with societal expectations of a successful marriage and children. They may compromise between their earlier dreams and endeavour to adjust to a society which rewards “sociability” (Gilligan, 1977; Kerr, 1991; Perrone, 1997). Taken together these findings suggest that gifted young women are encouraged to actively develop their talents and pursue careers but not at the expense of compromising traditional societal value of nurturance and selflessness (Rodenstein, Pfleger & Colangelo, 1977).

The pattern of educational underachievement has been found in gifted young women (Benbow & Stanley, 1989; Terman & Oden, 1930). Gifted women are under-represented in high prestige and high income careers (Arnold, 1993; Callahan, 1991; Barker, 2000; Buckle, 2001; Reis & Callahan, 1989). Occupational stereotypes clearly suggest that many high status, challenging vocational options are masculine (Hollinger, 1991). Nevertheless high-ability young women are confronted with perceived pressure to focus on high status careers. Awareness of these conflicting views and an overwhelming number of vocational options has been found lead to anxiety and underachievement.

The internal influencers of self-esteem and career self-efficacy.

There are a number of dimensions, internal and external, which may influence the vocational decision-making of highly able adolescent females. Career-related goals or even satisfactory vocational decision-making in young people, particularly females, appear to be problems exemplified by a lack of self-confidence and self-efficacy (Hackett & Betz, 1981).

Throughout this study the terms self-esteem and self-concept have been used interchangeably. Harter (1990) has referred to self-esteem as global self-worth, the overall value one places on the self as a person. The evaluative self in which individuals make judgments about competence or adequacy can be referred to as self-concept (Harter, 1983; Harter, 1990).

The internal, or endogenous barrier emanates from the characteristics of the individual, regardless of environment (Webb, 1993). Exogenous barriers are problems that arise because of interactions within the environment of family or culture. Negatively internalized self-concept and the influence of external environmental barriers require strong personal self-efficacy to surmount (Hackett & Betz, 1981). Both anxiety and low self-esteem are seen as being important interactors in reaching a vocational direction. (Brown & Strange, 1981; Hamer & Bruch, 1997; Lucas & Wandberg, 1997; Slaney, Stafford & Russell, 1981). Conversely high self-esteem has been identified as a strong predictor of early vocational decision-making whereas low expectations of success are a major source of internal constraints influencing the diversity of vocational choice. The impact of high aspirations, focus and dedication is of particular relevance to the highly able adolescent as they embark on making suitable vocational choices (Casey & Shore, 1998)

Theories of social cognition would suggest that there are many facets of the self, a ‘private self’ and a ‘self’ that is presented to society (Fisk & Taylor, 1991). In the field of social cognition studies of how people make sense of themselves and others, suggests that people tend to think of themselves in terms of their ‘actual self’
A "possible self" allows the individual to experience a contingency between one’s current self and an imagined future self (Markus et al., 1990). It incorporates ideas of what people may become, what they would like to become, and what they are afraid of becoming (Markus et al., 1990; Fiske & Taylor, 1998). For adolescents, the ‘possible self’ is a specific representation of the self in a future state. Possible selves provide focus and organization for the pursuit of goals. A gifted young woman may perceive an academic self, a social self, an emotional self and a physical self. Which aspect of the self influences human behaviour, in this instance the vocational decision-making of highly able adolescent females, depends largely on which particular aspect of the self has been accessed. Appropriate self-knowledge is necessary in order to facilitate this focus. Ideally such knowledge includes personal efficacy expectations, as well as images of the self in future settings.

The literature suggests that, in choosing a vocation, one is in effect choosing a means of implementing a self-concept. Occupational choice therefore represents a translation of a person’s self into vocational terms (Hattie & Marsh, 1997; Herr & Cramer, 1996; Super & Bohm, 1971). It is argued that career development parallels personal development and that individuals tend to choose occupations which are consistent with their self-concept (Herr & Cramer, 1996). Knowing and accepting one’s self will therefore be an important determinant of vocational decision-making.

**Self-efficacy and career choice.**

Self-efficacy is the expectation that one has the ability to complete a given task or goal (Bandura, 1997). Together with goal persistence in the face of barriers, efficacy will determine whether a behaviour will be initiated. The strength of an individual’s self-efficacy will influence the amount of effort devoted to pursuing a goal by enhancing intensity and persistence of efforts (Bandura, 1997; Bandura, Adams & Beyer, 1977; Kelly, 1993; Kishor, 1981).
Research has identified an important association between self-esteem and career efficacy. Self-esteem has been regarded as the generalized form of perceived self-efficacy. In Fiji higher self-esteem has been found to correlate with higher scores on career task self-efficacy scales (Kishor, 1981). Bandura (1997), believes however that any positive correlation between the two terms is erroneous because self-efficacy is concerned with judgment of personal capacity and self-esteem is concerned with judgment of self-worth. Further Bandura argues that studies finding a positive correlation between self-esteem and self-efficacy have not recognised poor efficacy in pursuits deemed to be unrelated to self-worth. He proposes that individuals need more than high self-esteem to attain successfully in given pursuits. Self-liking does not relate to performance attainment (Bandura, 1997). He does concede however, that development of personal efficacy is likely to foster positive self-esteem, this being identified as being an important internal variable in vocational choice. Thus an extension of personal self-efficacy is career self-efficacy which represents an individual’s confidence in making career decisions and one’s expectations to enter a particular career successfully.

**Career self-efficacy.**

In the behavioural sciences the quest for ego identity is often interpreted as being the selection and development of a career path (Beuscher, 1991; McAdams, 1985). Identity achievement is usually attained around the ages of 19 to 23 years and occurs when young people make firm a commitment to career, values and beliefs. Identity influences women’s choices, priorities, and decisions.

These choices and commitments are associated with adolescence when identity and indecision issues are vital (Grant, Battle & Heggoy, 2000). Grant and her colleagues conducted a qualitative study which explored the issues influencing career related decisions of academically talented young college women. Although identity formation was not the focus of the study, they found that women with positive identity status, often fostered from childhood through family values, were more likely to be successful in their vocational lives. The literature identifies self-efficacy as an important predictor linked to the presence of levels of career indecision.

Research findings in the area of career or vocational self-efficacy are disparate. Career self-efficacy has been identified as an important variable in career choice and development and is influenced by gender, self-esteem and academic ability (Betz & Hackett, 1981; Hollinger & Fleming, 1988; Kelly, 1993). The relative importance of the variables however can be disputed. Betz and Hackett believed that, for women, gender considerations influence career self-efficacy. They believed that gender issues had more influence on perceived vocational options than academic ability. In contrast Kelly (1993) found achievement or academic ability to be a stronger predictor of career self-efficacy than was gender.

The college women in the Betz and Hackett (1981) study had higher efficacy for traditionally female occupations. It was argued that the young women’s lack of interest in male occupations was related to their low career self-efficacy expectations. The participants in Kelly’s (1993) study were high school adolescents who completed interest and self-efficacy ratings of twenty vocational occupations. Ten of the nominated careers were female dominated. Participants indicated their confidence in successfully completing the educational and training prerequisites for the occupations as well as their expectations for entering the occupation. Higher achievers expressed greater efficacy expectations than did lower achievers. The premise gender influences on career self-efficacy are less influential than academic achievement are in contrast to the findings of Betz and Hackett (1981), who found that for women, academic achievement was unrelated to career self-efficacy. They found that career self-efficacy for college men was for traditionally male careers, and women for traditionally female careers.

Largely as a result of socialization experiences, women fail to realize fully their capabilities and talents in career pursuits due to a lack of personal efficacy (Hackett & Betz, 1981; Kelly 1993; Taylor & Betz, 1983). Women with strong self-efficacy or identity status however, have high self-esteem and tend to be very successful in their chosen careers (Grant et al, 2000). The literature suggests that the relatively poor self esteem exhibited by many highly able girls who lack confidence may predict low career self-efficacy (Eccles 1985; Hollinger, 1984).
Self-esteem

William James, often referred to as the father of modern philosophy, proposed that self-esteem is linked to success (Seligman, 1995). He theorized that the more success we achieve, and the lower our expectations, the better our self-esteem. Seligman (1995) believes that the concept of self-esteem has been used in schools to develop only one type of self-esteem, that of “feeling good”. Schools are concerned with the personal judgment of worthiness, an appreciation of one’s own worth and importance. Seligman’s view is that personal “feeling good” self-esteem must be integrated with feelings of happiness that come from an active experience of success. He stated that “there is no effective technology for teaching “feeling good” which does not teach “doing well” (Seligman, 1995 p33). Seligman promoted the concept of two levels of self-esteem. The first, a feeling state which would include the emotions of mortification, self-contentment and satisfaction. The second would encompass our perceptions of the success of our interaction with the world.

Within this framework there appears to be a strong causal link between high self-esteem and affirmative vocational decision-making. Those students who are shy and lacking in self-esteem are more likely to encounter problems in vocational decision-making and generally be characterized as being more vocationally immature (Hamer & Bruch, 1997; Lucas & Wandberg, 1997). Conversely students with positive self-concepts tend to make earlier vocational decisions (Grant et al, 2000; Greenhaus, 1971; Kishor, 1981; Super & Bohn, 1971).

Young preadolescent gifted females have been found to have positive self-esteem (Kerr, 1991; Loeb & Jay, 1987). Gifted young girls appear to be high achievers with optimistic career aspirations in the years immediately preceding puberty. Upon reaching adolescence, this had been found to modify. An Australian study examining gifted adolescent girls in high school found that the highly able females have significantly lower self-esteem than that of their non-gifted cohorts (Lea-Wood & Clunies-Ross, 1995). One explanation is that it is not “cool” to be smart (Gross, 1989). This is consistent with the theory of Bronfenbrenner (1986) who believes that the peer group within the Mesosystem becomes more influential during
adolescence when the young woman looks her peers for approval and a feeling of commonality (Festinger, 1954).

The feeling of acceptance and validation experienced among gifted peers is powerful (Webb, 1993). In general gifted young people in dedicated programs for the gifted have been found to have high self esteem (Feldhusen, et al., 1990). Being educated with other young people who are of a similar ability enables the gifted child to experience affirmation and intimacy (Janos, 1990; Webb, 1993). Young people who are not involved in a curriculum appropriate to their needs and experiences do not share this positive self-concept related experience (Webb, 1993).

Researchers in the gifted field have concluded that self-doubt is the major reason gifted young women modify and change their career dreams throughout their lives (Kerr, 1991a; Noble, 1989). It is represented as being the primary obstacle inhibiting potential.

Many gifted young women lack risk taking behaviours as they aspire to unrealistically high goals (Whitmore, 1980; Webb, 1993). The “imposter syndrome” where young women perceive their abilities to be much lower than they are, lack the confidence to pursue high achieving vocations (Kerr, 1991a). The fear of success as well as failure precludes some women from taking the risks necessary to make appropriate vocational choices. Young gifted women are confronted by conflict between their identity as gifted students and their emerging identity as gifted women (Kerr, 1991a). This often results in a dichotomy between persevering with their former high vocational dreams and aspirations and, and pragmatism where they lower their sights in order to conform to what is seen as being appropriate for them, and consequently adjust (Kerr, 1991a ; Gross, 1993a ).

The influence of external socialisers primarily related to gender.

pressures on females’ career plans appears to be considerable as differing environmental experiences influence educational and vocational choices in young people. It has been suggested that the limiting effects of such sex-role stereotyping has a pervasive impact on the developing child’s self-belief system (Hollinger, 1991). A child is socialized in accordance with sex role stereotypes by these agents as well as by the media and other cultural carriers. By an early age young children appear to have clearly defined gender role based on stereotypes, behaviours and traits.

An early study by Rodenstein & Gleckhaus-Hughes (1975) examined the vocational aspirations of three different groups of young women these were identified as identified career-focused women, home makers and the integrators. Rodenstein and her colleague were able to identify elements from the women’s adolescence that helped account for their chosen lifestyles and career paths. The career focused young women were often unaware or indifferent to parental attitudes toward their career goals. These females chose scientific professions such as physicians, scientists and physicists as well as social occupations. They maintained this interest throughout high school and college, resisting any vocational pressure from their parents, and subsequently attaining their goals. Homemakers generally had the support of their parents and tended to select female dominated social occupations. The third group, integrators, also chose social occupations but were similar to career focused young women in that they too frequently chose scientific occupations. The integrators generally had support from their parents. It appears that the parental influence on career focused, highly able girls may be more limited than it is for young women in general (Rodenstein & Gleckhaus-Hughes (1975).

Parental influences do impact on the vocational choices of their daughters but the vocational guidance of highly able young women still takes place within the context of a society that is ambivalent in its attitude towards women’s vocational roles and aspirations (Kerr, 1997). A study by Kelly (1993) however, proposed that real progress has been made by gifted adolescent females in conquering the negative effects of gender socializing on occupational self-efficacy and occupational interest (Kelly, 1993). He found that achievement was inversely related to interest in traditionally female careers for young high school females. He believed that gifted
young women appeared to be developing occupational interests based more on the actual vocation than on the gender appropriateness of careers. They appear to be developing occupational interests based more on the actual work of careers than on gender appropriateness. Kelly’s findings suggest that highly able young women are no longer avoiding vocations seen as only suitable for males. They propose that high achievers are not interested in careers that may limit their professional growth, creative expression and personal financial rewards.

Arguably many females fail to reach their full potential because they face psychosocial barriers to career achievement (Hollinger, 1993; Eccles, 1985). Early socialization by parents, teachers and others has been shown to have a profound impact on women failing to reach their full potential when predicted achievement is compared with actual achievement (Card et al, 1980).

External influencers and feminist theory.

“…but too many of us (women) lose our sense of self-worth early on. Girls are especially vulnerable, often turning from free spirits into “female impersonators” by adolescence (Steinem, 1992 p 36).

Feminist theory is an aspect of external influence on women. As such it has a direct impact on the careers perceived by some young women as being acceptable and subsequently pursued. The feminist position represents females as having females use a different base for moral judgments than men and that female existence consists of relationships and interconnections with others (Gilligan, 1977; 1982; Rodenstein et al, 1977).

Gilligan purports that the traditionally approved female role in the community is that of the nurturing homemaker. This, Gilligan believes, concurs with the females perceived acquiescence and need for external sources of control and praise. Gilligan argues that during adolescence girls tend to compromise themselves by dismissing their inner feelings and aspirations in order to conform to socially acceptable norms. Young women receive contrary views between “compassion and autonomy” and “virtue and power” (Gilligan, 1977, p 491). The result Gilligan believed is that young
women often distance themselves from their knowledge and “bury themselves and parts of themselves in an intricate, repressed underworld” (Gilligan et al; 1990 p14).

Young women may attempt to hide their abilities and present themselves as someone other than themselves. On one hand a girl is exhorted to achieve, but conversely she is under constant pressure to be feminine and is discouraged from achieving too much. This contradictory message is particularly acute among intellectually able girls where typically they are expected to develop talent. Gifted students are expected to be active, assertive and exploring. They are exhorted to succeed in the traditionally male dominated careers of such as science and medicine. On the other hand, they are still expected to be selfless, nurturing and giving (Hoyt & Hebler, 1974).

Ambition and aggression in males is tolerated in Western society. A female is criticized however if she is perceived as being too masculine (Gilligan, 1977; Steinem, 1992). Consequently she is guided towards a career that will not threaten the society in which she is expected to be a nurturing contributing member. Wilkie (2001) writing in the Australian popular press, believes that is it more of an issue of perception, that women are seen somehow less capable, that they don’t have stamina or emotional toughness to hold top executive positions because of their nurturing, emotional side. If they do display these qualities they are seen as being hard and unfeminine (Gilligan, 1977, Wilkie, 2001).

Writing in the Australian popular press O’Conner (2001) observes that the young girl of today still learns early that love and approval are tied to serving and compliance. O’Connor observes that such an attitude is exacerbated by what appears to be a woman’s tendency to be responsive to the needs of others and her desire to seek harmony whenever possible. The end result of accommodating other people’s needs and compromising her own desires culminate in a chronic loss of self-esteem

Many of the contradictions that women face inherent in the feminist literature of the 60s, no longer appear so sharply defined today (Buckle, 2001). The choices for Australian women are greater and the preconditions are more amenable to women

than they have ever been. Women are well represented in the workforce, albeit not in the most prestigious positions. The conflicting demands of work and children remain as a difficulty. Indeed the home/career conflict has been shown to result in many bright young women delaying their education or the pursuit of appropriate career placement until after family needs are met. Alternatively they may choose an occupation, such as teaching or nursing that is more compatible with the approved female role (Fox, 1980; Clark, 1988; Hollinger, 1991; Kerr, 1991; Hollinger & Fleming 1992).

To the current generation of women, in difficult economic times, the home/career issue is very pertinent. Firstly because of the lack of choice it offers to some women, and alternatively, the difficulty associated with the choice for women who wish to pursue careers.

The influence of the family.

Any list of important career choice determinants emphasizes the many direct and indirect roles the family plays in influencing their children’s vocational decisions. (Fleming, 1985; Kerr, 1991; Noble, 1989; Olszewski-Kublius & Yasmoto, (1993) Rodenstein & Gleckhauf-Hughes, 1975; Wilson, 1991). The family, first by setting the genetic heritage, and then by creating and fostering the environment in which a child’s abilities develop, has been identified as the most critical component in the translation of talent into achievement (Olszewski, Kulieke & Buescher, 1987). The nature of parental aspirations and rewards, together with assistance in learning provided by the parents are documented steps toward achievement motivation (Tannenbaum, 1997; Rimm, 2000).

There is sound evidence to suggest that family variables are the single most reliable predictor of adolescents future occupations (Schulenberg, Vondracek & Crouter, 1984). Previous experience and parental attitudes about the importance of subjects have been found to significantly influence attitudes and values placed on

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9 Prue Goward, Australian Sex Discrimination Commissioner Geelong Advertiser 12th September.


A value system is communicated to children both formally and informally. Many prodigies who achieve world class recognition in their fields were groomed for their success while still in play school. At this level of exceptionality the influences of the home were found to be far more important than those of the school (Silverman, 1993; Sosniak, 1981). The aspirations and expectations that the family holds and transmits is critical to the limits and opportunities perceived by their children (Fleming, 1985). Higher levels of parent support during childhood and adolescence are associated with earlier vocational choice (Fleming 1985; Friesen & Dillabough, 1992; Hollinger & Fleming, 1992; Siebereisen, Vondrecik & Berg, 1997; Silverman, 1992; Teese 1997; Young, Raymond & Benbow, 1989) The family’s expectations, values and needs are transmitted to young women through traditional family interaction and the family’s expectations become critical to the vocational opportunities that the young women perceive (Callahan, 1991; Kerr, 1991; Olzwewski, et al, 1987) Early exposure to these parental expectations as well as to the expert instruction provided by the family have been found to determine gifted individual’s talent and career paths (Bloom, Noble, 1989; Wilson, 1994; Kerr, 1991; Tomlinson-Keasey & Little, 1990).

As a child reaches adolescence, parental influence may be modified. The change also appears to be dependent on gender. Differing results from studies encompassing both gifted and non-gifted adolescents of both genders found that young children’s vocational attitudes were much the same as those held by both parents until adolescence. After this, the evidence diverges. According to Wijting, Arnold and Conrad (1978) change was evident during adolescence when males and females both reflected more of their fathers’ attitudes than those of their mothers’. This is supported by Kerr’s (1991a) study of thirty-one eminent women, finding that girls were likely to be influenced more strongly by modelling of intellectual and cultural pursuits by parents of the opposite sex (Kerr, 1991a). The result is not entirely uniform however as many of the 2000 successful women in Rimm’s study
reported that it was their mothers who had provided the most support during their upbringing (Rimm, 2000).

Parental education has appeared as one of several indicators of the family’s status (Tomlinson Keasey & Little, 1990). The educational status or level of education of the parent is often depicted as an indicator of the values that parents place on education. This value judgment appears to pervade the home environment and become a part of the child’s value structure. The relationships between socio-economic status and high vocational aspirations for children have been associated (Super, 1990) Well educated parents have been found to have high educational and vocational expectations for their children (Tomlinson-Keasey & Little, 1990). According to Super (1990) the occupational level attained by the individual is determined by their parent’s socio-economic status. It would appear that parents with high status careers would invest considerable interest in their offspring’s vocational choice. Middle and upper class parents in higher socio-economic groups would tend to give their children positive messages about attending college and university. These parents discuss their own college attendance and expectations.

Economic constraints may affect the influence of the family. Low-income parents may also have high expectations for their children. Notwithstanding the high aspirations the child and parents may have, the pragmatic day to day financial limitations of the family can cause long term planning for college non-viable (Fleming 1985; Olszewski, Kubilius & Scott, 1992; Tomlinson-Keasey & Little, 1990; Schullenberg, Vondracek & Crouter, 1984).

One aspect of the parent-child relationship can be a negative however as many highly able adolescents see themselves as separate from parents and family in their search for identity (Buescher, 1991). This need for self identity can pressure young persons to exclude elements from the past that have had an important influence on their lives. Thus young adolescents may try to exert control over their parents by rejecting parental goals and values. They may often deny and abandon talents and abilities, believing them to be irrelevant to their future (Buescher, 1991). During adolescence many ideals of mother and father may give way to the strong influence of
the peer group and other role models which may well be in conflict with the parent’s previous values (Beuscher, 1991). Parents who have come to expect a continuation of the positive behaviours displayed by their offspring during pre adolescence become dismayed by the apparent regressive process experienced by their talented sons and daughters during adolescence (Buescher, 1991).

**The influence of teachers and counsellors.**

The first major influence a child confronts away from the home is the school. The impact of decisions or choices by significant others, that is, teachers, plays a central role in the vocational decision for gifted young women. Vocational counselling for highly able students frequently is neglected however (Hollinger & Fleming, 1992; Wilson, 1994). Often school personnel believe that gifted girls are sufficiently able to succeed on their own (Kerr, 1997). Yet it has been found that gifted young women cannot progress satisfactorily without adequate counselling and advice as they choose career paths (Noble, 1989). Counsellors who are uninformed about giftedness, sex equity and women’s issues appear to contribute to the decrease in female achievement and vocational ambitions (Read, 1991).

Through positive or negative interactions with gifted students, teachers, especially career counsellors, have an important influence on whether the young women undertake traditional or non-traditional occupations. Traditionally female occupations such as nurses and teachers are still viewed by many counselors as more appropriate for young women than a vocation usually dominated by men. (Noble, 1989). Indeed some young women are actively discouraged by their secondary school teachers from pursuing non-traditional careers such as technology, it being deemed as unsuitable for women (Barker, 2000; Teague, 1999).

Anecdotal evidence from gifted women in the United States indicates that they were often less likely to have received adequate career counselling. Career counselors have been seen to confine their guidance to the administration of vocational guidance inventories and to writing letters of recommendation for college
entrance (Buescher, 1991; Casserly, 1980; Hollinger, 1991; Kerr 1991; Noble, 1989; Shroer and Dorn, 1986; Walter, Reis & Leonard, 1992; Wilson, 1991). As a result the young women found themselves ill-equipped to make the kinds of choices that would have enabled their effective participation in a complex work force.

A recent Victorian study by Teese (1997) reported that according to some students, guidance counsellors limit their focus of support to students who are undertaking a professional career. He found that those students who are in curriculum strands unlikely to lead to higher education are the least likely to agree that school counsellors helped them with their vocational planning (Teese, 1997). Contrary to the conclusions of Teese (1997) which found teachers and counsellors as having very little influence of career choices of Australian children, another Australian study found role models ranked second after teachers as important influencers of career choice (Price 1998).

Studies also have found that career guidance can vary as a function of school support. This could well be in the areas of funding allocation and curriculum prioritizing. Schools from higher socio-economic higher areas tend to give students more support by employing special career counsellors. Children from more disadvantaged schools may be less likely to receive adequate vocational guidance (Olszewski, Kublius & Scott, 1992).

**Wider Social Influencers**

**Media**

Although not fully explored or understood it is arguable that the influence of the media in its various forms intrudes, or is introduced into virtually every home and family in society, especially Western society. The influence of the media can be seen in three key ways. Firstly through editorial opinion which professes to convey the traditional values of society. Secondly, when reporting female public figures the
media often emphasis their Femininity, their appearance, marital status and their age rather than professional qualifications and achievements. Thirdly through the promotion of media role-models, the manner in which the socially and sexually desirable young woman should conduct herself is presented regularly in almost every form of mass communication. The influence of the “sit-com” is significant, as characters in such programs as “Sex in the City” or “Seinfeld” seldom combine vocation and child raising in programs often designed specifically for young women.

Another function of the media is reporting. Current affairs and news programs frequently refer to the constant professional childcare versus homecare debate. Although today’s gifted young women understand that they do not necessarily have to make a choice between career and family they are often unsure how to proceed (Silverman, 1987). The impact of of maternity leave on the career trajectory of females as well as the lack of adequate child care facilities in many Australian workplaces continues to be well documented in the Australian media (Carson, 2001; Wheeler, 2001; Wilkie, 2001). Articles relating to the career versus motherhood debate featured in the current popular press in Australia attest to this (Hellard, 2001; Wilkie, 2001; Wheeler 2001; Carson 2001). An Australian study initiated by the University of New England reported that of 14,000 young women in the 18 to 23 age group, ninety-six percent of them did not want to give up a career to be a full time mother. The article noted that the same study found that two-thirds of the women surveyed wanted to combine motherhood with working full-time. This revelation is important. Australia is one of the few countries in the world that does not have a national paid maternity leave system. Although individual organizations do have paid leave, approximately 70% of Australian women employees now have no right to paid maternity leave. American actor Calista Flockart, in her television role as Ally McBeal, is promoted as the archetypical modern young women. In an interview with an Australian womens’ journal she stated- I guess that’s the big question - can you do both or do you have to choose? To be honest I haven’t made any decision about it. I

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10 Margaret Bear Lecturer in Workplace Relations University of Sydney Australian Broadcasting Commission (ABC) 3rd December 2001

do want children but I believe you either have a career or you have to have children”. (Wheeler, 2001).

If the messages conveyed by the media are re-affirming the gifted female’s faith in herself and her own beliefs, principles, values and expectations, they communicate that non-traditional vocational choices are acceptable. If media themes simply reiterate society’s traditional expectations of marriage and child raising for the young woman their influence becomes extremely negative for her.

**Peers/friends.**

As pervasive as the influence of the media is that of the peer group. The theory of social comparisons suggests that the individual responds to a powerful drive. Peer acceptance and/or fear of peer disapproval are of particular importance to the young woman during her adolescent years. This desire to compare and evaluate opinions and abilities with those of contemporaries rather than those of someone vastly different from themselves is strong (Festinger, 1954). The adolescent subculture often includes anti-intellectual values that act to discourage academic achievement. The choice between a commitment to academic pursuit, as against peer pressure to conform to a more conventional adolescent values, is a dilemma faced frequently by the gifted young individual (Tannenbaum, 1997). Thus the adolescent girl looks to her peers for approval and a feeling of commonality. A study by Brode (1980) suggests that gifted young people are more heavily influenced by a need for peer acceptance than their non-gifted classmates. Often a gender role bias in the adolescents’ reactions to each others’ plans may limit the educational and vocational options considered seriously by gifted females when making important career decisions (Eccles, 1985).

Gifted adolescents experiences all the adjustment difficulties associated with the adolescent period. They may be similarly dissatisfied with their bodies and social status as their non-gifted cohorts. They may have the same concerns over relationships with siblings and parents. Studies of personality traits and emotional adjustment of gifted students conclude that the gifted are as well adjusted emotionally
as the average student (Janos & Robinson, 1985; Olzewiske-Kubilius, Kulieke & Krasney, 1988). Another body of literature suggests that young people with exceptionally high intelligence have more emotional adjustment difficulties with age-mates than their more moderately gifted peers (Gross 1993a). In the young person’s ratings of their perceptions of peer acceptance, level of intelligence appears to be a variable. The modestly gifted students rated themselves extroverted, socially adept and popular, whereas those students with unusually high intelligence found difficulty in relating intellectually and socially with, and to, their age mates (Dauber & Benbow, 1990; Gross, 1993a).

It has been suggested that a strong socio-economic influence is also evident. Socially disadvantaged gifted students often are discouraged from academic attainment by non-gifted peers more frequently than other groups (Olszewski, Kubilius & Scott, 1992). Some talented adolescents, male and female, resort to unacceptable anti-social behavior. This may be construed as a attempt to increase perceived personal status amongst non-gifted critics in their peer group.

Gifted young females excel at imitation and adaptation and may wish to blend into a group rather than demonstrate their unusual abilities (Silverman, 1991b. Gifted female adolescents may compare and evaluate their opinions and abilities with their intellectual peer group at school. Here they are able to relate their performance with others of their level of aspiration.

For the gifted girl in her search for intimacy and the need for mutual acceptance, the importance of the peer group is considerable (Gross, 1993a ). Feeling different and not belonging can be greatly magnified by the reactions of the peer group (Beuscher, 1991). Similarly talented young people have a need to seek each other out trying to find someone to like and accept them (Gross, 1993a).

By sharing experiences with one another, young women have been found to become aware of their own influences on their friends’ vocational choices and can make valuable contributions (Buescher, 1991; Buescher & Higham, 1989; Eccles; 1995; Gross, 1989; Noble, 1989; Teese, 1997). Anecdotal evidence gathered from

high-ability Australian girls in a selective girls’ high school proposed that gifted young women were often inclined to follow their friends’ career choices. The girls chose the “acceptable” and “harder options” at university rather than their own preferences. It seemed “peer group pressure won the day” (Wilson, 1991, p 134).

**Mentors and role models.**

Along with friends, mentors can take an important place in the lives of many highly-able young women. Studies of talented individuals’ suggest that the influence of mentors provide the necessary support and encouragement that these young people require in order to make appropriate vocational decisions (Beck, 1989; Casey & Shore, 1998; Kaufmann 1981). Mentors facilitate the learning of their young protégés by acting as guides, counsellors, role models and friends, and that programs which include both classroom and mentorship selections should be an integral part of a curriculum for the gifted girl (Beck, 1989). Beck believed that there was a critical need for female mentors as mentors enable highly-able able young people to think productively about their vocational plans and ultimately make focused decisions (Torrance, 1984; Casey & Shore, 1998; Reilly & Welshe, 1994; 1995). While this may hold true for young males, Reilly and Welshe, (1994;1995), found that three times as many females as males who had been mentored reported being able to make more informed career decisions.

Although the retrospective, anecdotal studies of adult women by Kerr, (1991) found that many gifted women viewed their husbands as mentors it would appear that female mentors also serve as appropriate and important role models encouraging the young women to pursue their aspirations and achieve their potential. Research investigating accomplished adults reported that parents encourage their daughters to seek female mentors as role models (Schaffer, 1986). Women themselves also reported increased self-confidence in their vocational capabilities if mentored by a female (Grau, 1985; Rimm 2001;
Summary of the review of the literature.

Interlinked relationships within the social environment of the adolescent enables observer to view the interaction of variables which influence vocational decision-making (Hollinger, 1991; Hollinger & Fleming, 1992). A model which enables the observer to examine the impact of environment on the individual is that of Bronfenbrenner (1977:1986).

Bronfenbrenner’s environmental model is presented as an ecological system. Industrialised society is conceptualized into four external systems: the Microsystem, the immediate physical environment comprising home and family, school and friends, the Mesosystem which is comprised of overlapping and interacting Microsystems such as school and home as well as school and workplace; the Exosystem, within the wider community made up the parent’s workplace and social network, and the Macrosystem encompassing wider social values systems such as the government, religion and the media. These systems examine the influence of the environment on important family processes. As such, Bronfenbrenner’s ecological model contributes to an understanding of the socio-cultural environment of the development of the individual. The socializing agents within the three systems, parents, teachers, school atmosphere, friends, media and social values interact to influence the young person’s subject choice and ultimate vocation.

As adolescents confront the need for financial independence they must decide whether or not to continue formal education and what vocation to pursue. Theoretical perspectives associated with vocational development can be broadly categorised as either differentialist or developmental. The differentialist perspective advocates matching the individual’s interests and personality to vocational demands (Holland, 1986). The skills and attitudes of the individual are matched with vocations in a “goodness or fit”. Developmental theorists believe that vocational development advances as a function of maturation. It peaks between the ages of 15 and 25 when cognitive capabilities are enhanced and individuals acquire a vocational identity.
(Ginsberg, 1772; Neilsen, 1987; Super & Hall, 1978;). An alternative to both the differentialist and developmental views is one that advances the theory that vocational goals are a reflection of socially acceptable roles appropriate to race, sex or socio-economic class Neilsen, 1987; Godfedson & Becker, 1981; Ginsberg, 1972; Super, 1978).

Holland (1985) is a proponent of differentialist theory. He believes that vocational choices flow from histories and personalities which shape interests and thus interests are an important aspect of personality. Holland proposed that ideal vocational choice is dependent on a compatibility between vocational interest and occupational environment. The Vocational Preference Inventory (VPI) efficiently interprets and organises information about people’s vocational options across social and cultural settings (Kelso, 1986). In Australia, Naylor (1993) and Kelso (1986) have completed important work utilising Holland’s theories.

No single factor accounts for high accomplishment and the combination of elements is reflected in the work of Tannenbaum (1997), Walber and Herbig (1991) and Walberg and Seiser (1997). Predictive variables of fulfilment and promise interact to influence talent development. Tannenbaum’s model of the development of potential views the environment as being important. Environmental influences of home, school and the wider community together with general ability, special abilities, drive and motivation affect a young person’s potential and ultimate vocational possibilities. Walberg and Zeiser (1997) also identify ability together with motivation and self-concept, self-efficacy perseverance on tasks, quality of, and time of teaching as well as the environment found in the home, school, peer group and exposure to mass media.

The theories of Bronfenbrenneer, Tannenbaum, Walberg and Zeiser all promote the importance of the environment on the development of the individual. Environment is influenced by heredity, the cultural and personal aspects of parents, social class and culture as well as the physical environment. These environmental factors, in turn, interact to develop personally type and interests.

Some high-ability young women are able to decide their future careers early on in their vocational trajectory (Kerr, 1991a). The unique characteristics of many high-ability young women however are associated with indecision in vocational choice. The implications of high-ability and multi-potentiality lead to conflict and difficulty in setting vocational goals. Because high-ability students are often intolerant of ambiguity vocational indecision causes confusion and anxiety (Buescher, 1991; Perrone, 1997; Web et al, 1982). Kerr, 1981/1991; 1985 Kerr, 1981/1991;).

Gifted girls recognise and react to high expectations of parents, teachers, friends and society in general. They are exhorted to focus on vocational goals seen as commensurate with their ability (Kerr, 1981/1991; Perrone, 1997; Webb et al, 1982). They may perceive their dreams as being unworthy of their intellectual ability (Silverman, 1991). The adolescent girl is often confronted with messages of marriage and children opposed to career which may result in lowered vocational ambitions as many gifted girls become accommodating and adaptable as they aspire to moderate status careers (Kaufmann, 1981; Kerr, 1991).

Hattie & Marsh, (1997) proposed that in choosing a vocation one is, in fact, choosing a means of implementing a self-concept. Occupational choice is a translation of a person’s understanding of self into vocational terms. An internal barrier to women’s vocational goals is that of poor self-esteem. Self-esteem has been identified in the literature as impacting on aspiration. This, in turn, influences the diversity of vocational choice (Brown & Strange, 1981; Hamer & Bruch, 1997). According to Bandura (1997), self-efficacy is the expectation one has in their ability to complete a task or goal. This can be viewed as the adolescents’ belief in her ability to gain the appropriate marks in school then successfully being accepted for the course of study of her choice and ultimately qualifying in the occupation of her choice. The literature has identified a lack of personal self-efficacy in young women. This can be largely attributed to socialisation experiences which, in turn, are linked to career indecision and a unrealisation of capabilities and talents (Hackett & Betz, 1981; Kelly, 1993; Taylor & Betz, 1983).
Self-efficacy can be linked to self-esteem or self-acceptance (Harter, 1983; Harter, 1990). The literature identifies a strong link between high self-esteem and early vocational decision-making. Students who are lacking in self-esteem are generally more vocationally immature (Hamer & Bruch, 1997; Lucas & Wandberg, 1997).

Pre-adolescent females have been found to have positive self-esteem (Loeb & Jay, 1987; Kerr, 1991). This positive self-esteem undergoes a shift in adolescence when gifted girls have been found to have lower self-esteem than their non gifted classmates (Lea-Wood & Clunies-Ross, 1995). Self-doubt has been identified as a major reason gifted young women modify and change their vocational dreams (Kerr, 1991; Noble 1989). This often results in pragmatism or adjustment when women perceive their abilities as being lower than they actually are (Kerr, 1991; Gross 1993a). Validation and acceptance is experienced by gifted young people who are educated with other highly able young people (Feldhusen et al., 1990). Young women who do not have a curriculum appropriate to their needs however, do not share this positive concept (Webb, 1993).

Feminist writers have highlighted the contradictory messages currently received by young women. That is one of compassion or autonomy and virtue or power (Gilligan, 1977). The young girl of today learns still that love and approval are tied to serving and compliance (O’Connor, 2001). This is an especially acute dilemma for intellectually able girls who are expected to develop talent but at the same time be selfless, nurturing and giving (Hoyt & Hebler, 1974). Women are perceived as not having the emotional toughness to hold top executive positions within the workforce (Wilkie, 2001). The qualities that appear to be required for such positions are ambition and a degree of aggression, are viewed as being hard and unfeminine (Gilligan, 1977; Wilkie, 2001).

Although of the contradictions women faced identified in the feminist literature of the 1960s is less sharply defined today (Buckle, 2001; Goward, 2001) and women do have more choices. They are still confronted with the conflicting
demands of work and children. This is particularly pertinent in economic times that necessitate the need for dual incomes within a family.

The attitudes, expectations and behaviours of parents, peers and teachers are external socializing agents which influence the environment of the young woman impacting on vocational choice (Eccles, 1986; Noble, 1989; Hollinger, 1999. The family sets the genetic heritage and creates much of the environment that influences the developing talents of the child (Olszewski Kulieske & Bruescher, 1987). Parental aspirations, expectations and values become critical to the vocational perceptions of young women (Callahan, 1991; Card et al, 1980; Kerr, 1991, Olszewski et al, 1987). Parental influences may be modified however as the child reaches adolescence and other environmental factors within the wider community become important (Brode, 1980; Kerr, 1991; Wijting Arnold & Conrad, 1978).

The school is the first major influence on the child away from the family as the importance of peers and teachers impact on the child (Beuscher, 1991). Vocational counselling is often neglected in school. High-ability young women have been expected to succeed on their own (Kerr, 1997). Careers counsellors who are uninformed about giftedness appear to contribute to the decrease in female achievement and vocational ambitions (Read, 1991). Many counsellors still view traditional careers as being the most appropriate for young women (Noble, 1989; Teague, 1999, Barker, 2000).

The school is generally the individual’s first experience of the wider community where the pervasive influence of the media comes to bear on the child. The self-system is when we compare ourselves with others and are responsive to how others evaluate us (Festinger, 1954; Bandura, 1986). The media re-inforces the ideals and values of society. The family/career issue is constantly debated in the media exacerbating uncertainty, doubt and vocational indecision (Carson, 2001; Wheeler, 2001; Wiikie, 2001).

The peer group has been identified as a powerful influence. Young people prefer to evaluate and compare opinions and abilities with contemporaries (Festinger,
1954) the adolescent need for peer acceptance is strong (Brode, 1980). The adolescent subculture influences the aspirations and values of gifted young women (Eccles, 1985; Fleming, 1985). This can be expressed through encouragement or discouragement. The anti-intellectual behaviour of the peer group often act to detract from academic attainment (Olszewski Kublius & Scott

Gifted females excel at imitation and adaptation (Silverman, 1991b; Kerr, 1991). The feeling of being different is magnified by the reactions of the peer group. The need for intimacy and acceptance of the peer group is considerable (Gross, 1993a). By sharing experiences with one another young woman become aware of their influence on their friends’ vocational choices. They can make valuable contributions (Noble 1989; Gross, 1987; Eccles, 1995; Teese, 1997). Conversely they can influence a young woman to make vocational preferences that are not entirely her own (Wilson, 1991).

Mentors have been identified in the literature as providing important vocational support and advice for gifted young women (Beck, 1989). Mentors enable high-ability young women to make focused vocational decisions (Casey & Shore, 1998; Reilly & Welshe, 1994; Torrance, 1984). Like mentors, female role-models encourage and enable high-ability young women to pursue their aspirations and achieve their potential (Grau, 1985; Rimm, 2001c).
Chapter Three

Design, Methodology and Procedures

This study is an examination of the variables influencing the vocational decision-making of adolescent girls in Victoria, Australia. The sixty-three high-ability girls were identified through intelligence and/or general ability tests as well as by teacher nomination. The forty-nine girls in the control group were classmates of the high-ability girls and were selected at random by the senior co-ordinators of their respective schools.

This was a complex study and the design was built on both quantitative and qualitative data collection. Thus this investigation is an accumulation of perceptions and self-reporting comprising questionnaires, formal inventories and interviews.

The null hypothesis is that there is no difference between the two groups, high-ability and control in the variables influencing vocational choice. An hypothesis is consistent with experimental design. The objectives of the study are wider than simply testing a null hypothesis however. It aims to identify and analyse those variables which impact on vocational choice at the point of time when the decision-making process is actually occurring.

The core ideas of the study were informed by the literature. These ideas were framed in the following research questions.

- What is the relationship between parental occupations and daughters’ vocational choice?
- Does self-esteem influence vocational aspirations and early vocational decision-making?
- Does vocational interest measured on the VPI reflect final career choice?
- Is there a change in the relative influence of the variables over the three years?
• Which variable is perceived by the subjects as having the most influence?
• Is there a change in the stability of vocational direction over the six years?

**Study Design**

The investigation is designed to set out possible differences between two groups of young women high-ability and average. It represents a longitudinal view of the young women’s perception of themselves and those of significant others, along the trajectory of vocational decision-making.

There are three independent studies. Study One is quantitative and relevant to hypothesis testing whereas Studies Two and Three are best described as multiple case studies. The structure of the three studies combine both qualitative and quantitative methodologies spanning a six year period. Data gathering procedures included inventories of self-esteem and vocational preference, questionnaires completed by the subjects, interviews with subjects as well as anecdotal comments made by the students.

The use of multiple perspectives, theories and research methods is a strength in educational research (Johnson & Christensen, 2000). Although Quantitative and qualitative research approaches and methods are complementary it is often not practical to use more than one research method in a single study. However the complexity of the current investigation necessitates research based on different methods. The relevant published research studies used in the literature review include multi-method research. The style and personality of the researcher may be reflected in the research methods used (Johnson & Christensen, 2000).

The data from studies Two and Three of the current investigation has been reported in the form of multiple case studies. Multiple-case studies focus on a group of people as they confront specific problems. Because case studies are descriptive, the focus is broad and encompasses many variables as they interact with the subjects. Case study reporting enables the utilization of the rich language of description “to elicit images and analyse situations” (Wilson 1979,p 448 ). Case studies, by
enhancing the reader’s understanding can enable the observer to gain new insight into
the relationship being studied. Case studies also rely on inductive reasoning (Merrium
1988) as distinct from the objective nature of quantitative data collection. Qualitative
case studies foster new and often deeper understandings of relationships and
concepts. Because the purpose of this study is to develop a model of career
trajectories, case study inquiry which is suited to the development and elaboration of
theory is appropriate. Case studies investigate, develop and elaborate on findings. It is
particularly suited to Studies Two and Three, both of which are elaborating on the
original quantitative study.

Quantitative methods as well as anecdotal reporting were used to
examine the data in Study One (n=112). The advantage of the quantitative
approach is that it measures the reactions of a great many people. This
facilitates comparison and statistical aggregation of the data (Patton 1987).
Quantitative descriptive research encompasses empirical data collections
that numerically describe the status of subjects with regard to specified
outcome variables (Vockell & Asher, 1995).

The nature of the data suggests that tests of significance should take into
account that the variables are not experimental but are behavioural. Indeed the power
of a test is determined by the analysis. When the aim of the research is to determine if
a variable is present or not present a more rigorous alpha level is appropriate. This
investigation uses complex and anecdotal data. The high-ability literature in the area
of vocational decision-making is inconclusive and so the current investigation is
exploratory in nature. This has resulted in the collection of great deal of data which
must be analysed in order to accept or reject the null hypothesis. However the
population (n=112) with a sample cohort (n=63) is small. The conventional choice of
a significance level in order to accept or reject the hypothesis is usually an alpha of
0.01-0.05 (Ferguson1966). The small alpha is indicative of the caution of scientific
investigators against making a Type 1 error, that is rejecting a hypothesis when it is
true or indeed a Type 11 error when an hypothesis is accepted when it is false.
However the possibility of making a Type 11 error increases when a smaller alpha
level is employed, that is we increase the risk of accepting a null hypothesis when it is
indeed false (Guilford, 1965). The result of too small an alpha is that relatively few
non chance conclusions are drawn and few differences and relationships are accepted.
It would seem prudent to look for a balance. However a smaller population can yield

valid predictions (Guilford, 1965). When externally determined risks are of little consequence such as those in the current investigation there is a possibility or a suspended judgment between the probability levels of 0.10 and 0.01. Thus an alpha of 0.1 was used to signify a significant difference between the groups in this investigation.

The data collection was progressive and gathered over a time span of six years. Frequency counts, crosstabulations and t-tests were used to describe observations, explore relationships and identify differences between groups on variables selected within the study.

Study Two is an extension of Study One. Study Three is an explication of Studies One and Two. From these two studies should come confirmation of the literature and new material. The multiple case study method found in Study Two and Study Three allows the researcher to develop and validate theories grounded in findings from the first study. Profiles have been constructed on each of the highly-able girls in Studies Two and Three. This allows similarities and differences between the girls to be discussed and highlighted in narrative form.

Overall the analysis in this study depended on an interpretation of aggregated data which was gathered using a combination of methodologies and was collected from different sources, for example, when multiple methods such as interviews, observation, and document reviews are used. This form of data management whereby different kinds of evidence are examined for corroboration or variance is known as triangulation (Lundsteen, 1991). However Guba and Lincoln (1989) believe that triangulation should not be used to gloss over legitimate differences in interpretations of data. The researcher designed a colour coded chart so that the data from Study Two could be compared to that of the Study One.

Diversity should be preserved in the report so that the “voices” are not lost (Guba and Lincoln 1989). The questions studied in the DMQ are a process in which these voices are heard. As such, findings evolving from this study may invite further exploration.

Studies Two (n=10) and Three (n=14) consist of three kinds of data collection; in-depth open ended interviews; direct observation and open ended written items on a questionnaire. Qualitative methods permit evaluation of select issues, cases, or events in depth and detail. The fact that data collection is not constrained by predetermined categories of analysis contributes to the depth and detail of qualitative data. The methodology produces a wealth of detailed data about a smaller number or people and cases (Patton, 1987). Such a methodology is chosen when no acceptable, valid, reliable, appropriate quantitative method is available, for example when no standard measures are available to study attitudinal changes (Mertens 1998). This type of research is often conducted in social situations that occur naturally and is particularly appropriate for this particular investigation which has been designed to examine vocational influencers within the environment of the highly-able adolescent girl.

A subsidiary of this exploratory study is to develop a model of vocational choice for highly able female adolescents. It is primarily focused on with variable “high ability”, that is students who have the potential for a high academic standard. Some of the best known studies emanating from the United States of America and Australia are retrospective (Kerr 1991: Rimm 2000), or indeed anecdotal, (Cox: 1996; Silverman 1991; Wilson 1994). No Australian research has examined the dimensions of vocational decision-making in highly-able adolescent girls. This study examines vocational decision-making of highly able females while it is taking place, that is while the young women are completing the last years of schooling. Much of the literature takes a retrospective view from adulthood. Investigations that rely on the subjective memory of the subjects after a period of time may not be as relevant. It is important that studies of highly-able young people be current and written when the young subjects are actually experiencing the upbringing, social relationships and other influences that contribute to their overall development. This investigation took place over a period of six years. As such, it is longitudinal in design. The vocational decisions of the young women have been gathered from school based perceptions through to the first two years of tertiary study. A unique concentration on the specific factors influencing vocational decision-making, suggested by the literature, has been addressed through three interrelated studies based on quantitative and qualitative data.

collection. They have been designed to examine, in a systematic way whether the variables are peculiar to high-ability young women or women in general and which, if any, of these identified variables is the most important.

**Identification of subjects.**

Within Victorian schools the educational demographic is diverse. The educational system comprises government, non-government (independent and church), single-sex and co-educational schools. Currently in Victoria there are 16025 government schools and 695 non-government or independent schools. To ensure that a wide-ranging population was included, students from all four educational settings were invited to be included in the investigation. Ethics approval from the University of Melbourne was applied for and granted.

In order to work within government schools the researcher needed approval from the Department of Education regional manager, Mr Geoff Chandler (see appendix D). In 1994 the Victorian Education Department was approached by the researcher in order to gain permission to collect data in Barwon South-Western district secondary schools. Five government secondary schools were invited to be part of a longitudinal study examining the vocational trajectory and ultimate occupational choices of highly-able adolescent girls. A letter of introduction written by Ms Eve Tindale, president of the Incorporated Association of Registered Schools of Victoria, enabled the researcher to approach non-government (independent) schools in order to carry out the study (appendix D). Permission to collect data in independent schools was then sought from the individual principals. The five individual independent school principals were contacted by letter and permission was granted. The researcher then visited all ten school principals order to clarify the investigation.

Due to an anti-testing culture within Victorian government schools at this time, very few schools formally identified high-ability students. The criteria for high-ability for the purpose of this investigation was discussed with them so that the sample cohort throughout the ten schools involved in the study was as homogeneous as possible. Selection of the control group was based on teacher’s judgement.

The subjects in Study One comprised 112 adolescent girls enrolled in years ten, eleven and twelve, in ten post primary schools within in a 100 kilometre radius of Melbourne in the state of Victoria. In the first year of the study the students were enrolled in three year levels Grades 10, 11 and 12. The following year Grades 11, 12 and first year post secondary education. The third and last year of the longitudinal study reviewed Grade 12, first and second years post secondary education. The three year levels were selected to reflect a larger representative sample of adolescent girls in the wider population as they progressed from senior school into the first two years of tertiary education.

Five government and five non government, five single-sex and five co-educational schools were represented in view of their demographic base. There were twenty one high-ability girls attending government schools and forty-two girls in independent schools. Twenty-seven of the high-ability girls were enrolled in single-sex schools. The control group comprised forty-nine average-ability girls who were school classmates and chronological age peers of the gifted girls and selected at random by their respective year co-ordinators. Seventeen average-ability girls were enrolled in government schools and thirty-two in non-government schools. Of these, nineteen girls were enrolled in single-sex schools. These schools were representative of a wide population as girls from working class, migrant and more affluent homes were included in the sample.

Sixty-three of the subjects had been identified within the previous twelve months as being gifted and/or high achieving by their performance on objective standardised tests and/or nomination by teachers. Teacher nomination took into account the student's ability to complete higher order cognitive tasks at a level significantly beyond their chronological age peers. It must be appreciated that students who were nominated by their teachers were perceived as being able to interface extremely successfully with the curriculum. In view of this, the “giftedness” of students at Victorian Education Ministry secondary schools was measured by a curriculum driven assessment for achievement. At this time it was not based on standardised norms.

The second, qualitative investigation was carried out from July through to December 2000. All ten young women in Study Two had taken part in the quantitative longitudinal study (Study One) spanning three years. During that period of time the participants lived in a large regional city in Victoria, Australia. The researcher was able to access the school records of ten young women who all responded positively to the researcher’s request for them to participate further in the investigation. The request was made by telephone or email. The researcher selected these particular young women for two significant considerations. The girls had all been educated in both single-sex and co-educational schools during their secondary education and they had all been formally identified as highly-able in primary (elementary school) on tests of general ability and attainment.

Study Three took place in April 2000. Fourteen high-ability students from a single-sex government secondary college in a large regional city in Victoria, Australia, were the subjects of a qualitative investigation in the form of multiple-case studies. With the advent of the “Bright Futures” policy in Victorian schools, a small number of secondary schools elected to trial an accelerated program for Grade seven students. Students for the Accelerated Learning Program (ALP) were selected on the basis of their results on tests of ability at the end of Grade six. They are able to complete the first four years of secondary school (Grades 7-10) in three years. At the end of Grade ten the students were able to progress into years eleven and twelve which comprise the Victorian Certificate of Education (VCE). The fourteen participants in Study Three were enrolled in Grade 12 as part of the Accelerated Learning Program at one of the trial schools and were selected to be part of the current investigation by the co-ordinator of the ALPs program.

Collection of data.

There were three phases of data collection in Study One. In the first year of the investigation the researcher visited all the schools which were to be involved in the investigation. The students from both groups, high-ability and control enrolled in Grades ten, eleven and twelve were administered the Self-Esteem Inventory (Coopersmith, 1981), the Vocational Preference Inventory (V.P.I.) (Holland, 1985)

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and the 'Decision-making Questionnaire' (DMQ). The researcher administered the instruments to each school group during one regular 40 minute class period. Although there was no time limit imposed, no student took longer than forty minutes to complete all three instruments. So that important anecdotal evidence could be considered, the girls were encouraged to write comments in the margin of the 'Decision-making Questionnaire' (DMQ).

During the next two years the DMQ was posted to all the students in the study together with a self addressed envelope. The students were requested to complete the questionnaire and to add anecdotal comments on the paper itself.

In Study Two there were essentially four phases of data collection. The three phrases in Study One plus a final semi-structured interview three years later. The Decision-making Questionnaire (DMQ), Holland’s VPI and the Coopersmith SEI were administered to the students in the first year of the original study while they were in the final years of high school. The DMQ was used to gather data on demographic variables relating to vocational aspirations and the relative importance of the social influencers of mother, father, teachers and peers. During stages two and three, that is the second and third years of Study One, the questionnaire only was posted to the students in order to examine patterns and trends over time. In the second year of the Study One school based students were in Grades eleven and twelve. The previous year’s Grade twelve students were by now in the first year of tertiary education. In the final year of Study One the only school based students were in Grade twelve. The remaining students were in the first or second year of tertiary education, in the workforce or unemployed. Phase four of the study was conducted three years later when all of the students had entered tertiary education (university) or were employed. A semi-structured interview was conducted with the subjects (N=10) by telephone or in person by the researcher. This was designed to determine current tertiary majors, degree completing status, school climate and retrospective views on the subjects’ vocational decision-making trajectory.

Consistent with the exploratory nature of the investigation was the option of a modified DMQ reflective of the findings in Studies One and Two. In Study One the

issue of female role-models was addressed but only in relation to the media. In the years immediately preceding Study Three, Victorian schools have actively pursued a policy of equal opportunity and affirmative action. Since the initiation of this policy, important women within the community are often invited to schools to address the female students at an assembly or small groups. It seemed appropriate to include more questions relating to female role-models in a wider frame of reference in Study Three.

In 2000, the researcher visited the school involved in Study Three. The students were administered the Coopersmith Self-Esteem Inventory (S.E.I.), the Vocational Preference Inventory (V.P.I.) by Holland and the modified 'decision-making questionnaire' (DMQ) designed by the researcher.

The following instruments were used in the collection of the data.

**Coopersmith Self-Esteem Inventory**

Self-esteem (self-concept) was measured using the Coopersmith Self-Esteem Inventory (Coopersmith, 1987). The Coopersmith SEI is based on a unitary notion of self-concept that the author defined as a set of attributes and beliefs that a person brings with him/her self when facing the world (Coopersmith, 1967). It was designed to measure evaluative attitudes in social relationships, relationships with the family and the academic world. According to the manual (1987) self-esteem” refers to the appraisal a person makes, and customarily maintains of him-or herself: that is, overall self-esteem is an expression of approval or disapproval, indicating the extent to which a person believes him-or herself competent, successful, significant and worthy. By administering the SEI to a group a general assessment of high, medium or low self-esteem can be obtained.

The school form of the CSEI is used with students ages eight through to fifteen. It yields a total score for overall self-esteem as well as four separate scores for the subscales. The subscales identify variation in of self-esteem in different areas of experience. The Inventory (School Form) presents 58 statements in the same vein as,
I'm popular with kids my own age" to which students respond to a dichotomous choice. 'Like Me" or "Unlike Me". Four subscales are identified by the author of the CSEI: General (26 items), Self-Peer Relations (8 items), Home (8 items), and Academic (8 items). There is also a lie scale which indicates extremely socialised response sets. According to the authors of the Coopersmith, a high Lie Scale score suggests defensiveness in a student's responses. The authors of the measurement believed that in such instances the inventory might be invalid. The Coopersmith Self-esteem Inventory was selected because it was the measurement tool used in other studies of gifted children. For example Winne et al., (1982) and Hansen and Hall, (1985).

Although the Coopersmith SEI has been criticised by some evaluators of self-concept measures (Keith & Bracken, 1997) because they believed it exhibits only moderate reliability and meagre support of validity the CSEI was the preferred tool of measurement in research findings referred to in the review of the literature. It was also used by the author of the current study in an earlier review of self-esteem in adolescent gifted girls (Lea-Wood & Clunies-Ross 1995). It is for these reasons the Coopersmith SEI was used to measure self-esteem in the current study.

The Vocational Preference Inventory (VPI)

“The choice of an occupation is an expressive act which reflects a person’s motivation, knowledge, personality and ability” (Coopersmith 1985). It has been used extensively by vocational counsellors to investigate career behaviour (Holland, 1985). In this investigation it has been used to identity vocational interests. The Vocational Preferences Inventory, developed originally to assess personality, is a useful appraisal of vocational interests (Holland 1985). The eleven category scheme assesses personality/occupational types in a theory of careers (Holland 1985). An individual’s personality is matched to appropriate career options. Holland’s theory is based on the assumption that most people can be categorized into one, or a combination of six personality types: realistic, investigative artistic, social, enterprising and conventional (RIASIC) which reflect six model environments. Two areas within the personality scale were examined because of their relevance to and impact on the
vocational choices of young women. These were the Masculinity/Femininity and Status scales.

In the current study the VPI was used;

- To identify vocational interests between the groups
- To ascertain the relative importance of the relationship between interests and final career choice.
- To examine the relationship between high scores on the masculine/feminine (M/F) scale and non-traditional career choice.
- To compare the parental career choices with those of their daughters.

The Australian Standard Classification of Occupations (ASCO) working draft 1983, which matched Holland codes to specific occupations was employed to classify the vocational choices of the subjects in this investigation. The typology in the ASCO draft provides additional descriptive information about the occupations. (Gurney, 1986). The researcher completed this match by hand

If an occupation involves explicit, ordered or systematic manipulation of tools or machines and is not involved in educational or social endeavours, it is categorised as a Realistic occupation. Manual, mechanical, agricultural, electrical and technical competencies are usually involved in or developed by workers in these occupations. For example, the occupation of hairdresser would be categorised as being Realistic.

Investigative occupations involve observational, symbolic, systematic and creative investigation or physical, biological and cultural phenomena for the purposes of understanding or controlling them. Scientific and mathematical competencies are common among workers in these occupations thus scientists would be included in the Investigative vocations.

The manipulation of physical, verbal or human materials to create art forms and products is categorized as an Artistic occupation. Photographers and musicians

would be included among *Artistic* vocations where competencies in language, art, music, drama and writing are common.

*Social* occupations involves dealing with people to inform, train, develop, cure or enlighten them and has little to do with manipulation of materials, tools or machines it is categorized as a *Social* occupation. Interpersonal and educational competencies are characteristics of people choosing *Social* careers. Psychologists, teachers and nurses are classified as being a *Social* occupation.

When people are manipulated organizational goals or economic gain, the occupation is categorized as an *Enterprising* vocation. Vocations in public relations and management would be examples of *Enterprising* careers where leadership skills and interpersonal and persuasive competencies are required.

Explicit, ordered and systematic manipulation of data, such as keeping records, filing materials, reproducing materials, organizing written and numerical data according to a prescribed plan, are the skills required in occupations categorized as *Conventional*. Accountants, data processors and other office workers are deemed to have *Conventional* vocations.

**Decision-making Questionaire (DMQ).**

In addition to these well known, validated and reliable instruments was a questionnaire developed by the author to address the variables associated with vocational choice identified in the literature (see Appendix A). It was constructed to identify and track those variables influencing vocational decision-making. There was a progression from perceived *interest* of the variables in the decision-making of the girls through to perceived *influence* and then actual occupational suggestions. The DMQ also invited anecdotal comment from the subjects. Because the study is exploratory, this instrument is an initial attempt to examine aspects of career choice while listening to the “voices” of the young women. The questions on the DMQ set out to address the following areas of focus:

vocational aspiration - questions 3, 4 and 5.
For example: I will do further study when I leave school. 1-2-3-4-5

interest of mother, father, teachers and friends questions 6, 7, 8, 9, and 12.
For example: How much interest has been taken in your career decisions by 6) Your mother? 1-2-3-4-5

influence of mother, father, teachers and friends-questions 10, 11,12,13, 24 and 25.

influence of the media-question 18.
For example: How much influence have female role-models in the media had on your career decisions? 1-2-3-4-5

The demographics of the two different groups, high-ability and control gives a background which is important in view of not being able to select the groups on the basis of test scores. The validity of the population was determined by examining the socio-economic status of the parent’s occupation.

**Data Processing and Data Analysis.**

The aim of Study One was to identify differences between the two groups high-ability and control. The data collection was progressive and gathered over a time span of six years. SPSS 6.0 was employed to analyse the quantitative data in Study One. The Coopersmith SEI, the Vocational Preferences Inventory (VPI), the Decision-making Questionnaire (DMQ) as well as the semi-structured interviews were scored by the researcher. Analyses were carried out by both parametric and non-parametric methods using SPSS 6.0. Frequency counts, cross tabulations and t-tests were used. The use of frequency tables was consistent with the fact that with certain data all that was required of it was essentially descriptive. Cross tabulations were used to examine relationships and t-tests were undertaken where appropriate to determine the significance of the differences between groups on variables selected within the study.

The aim of Study Two was to obtain a more accurate view of factors impacting on vocational choice which may occur over time and test the stability of
the vocational decisions made by the highly-able girls. As such it is an extension of Study One.

The second major analysis of data was in the form of a matrix based on the information gathered during Studies One and Two. The semi-structured interviews and original data from Study One were integrated and synthesized into case histories. A matrix planned by the researcher enabled a triangulation of the data, both quantitative and qualitative, to be analyzed. Different cases were compared and patterns which emerged were then observed. The data were coded to determine constant themes and to identify important influences and trends across a time frame. Anecdotal commentary was selected for the insights they offered in relation to the quantitative material.

The aim of Study Three was to confirm Studies One and Two and review new material in the light of current research and societal attitudes. As such, Study Three is an explication of Studies One and Two. The information collected in Study Three from the Coopersmith, SEI and DMQ was analysed and presented in the form of case studies. The case studies, together with simple frequency counts were examined. A longitudinal time lapse approach was used for the multiple-case studies.
Chapter Four

Results of Study One

This is an exploratory study which draws on both quantitative and qualitative techniques to examine what are complex issues. Thus its aim is to examine the factors that influence the vocational choices of highly-able adolescent girls at the actual point of considering and making vocational decisions.

Much that has been reported in the review of the literature is retrospective and based on the biographies of eminent and/or successful women for example, the studies of Kaufmann (1981), Kerr (1986), Tomlinson-Keasey and Little (1990). Although limited, the literature has examined aspects of the external variables of parents, teachers, peers and role models as well as the internal dimensions of self-esteem, vocational aspiration interest and influence. These are consistent with the influences identified in the literature specific to schoolgirls as being significant in the career choices of highly-able adolescent girls.

In the light of a limited literature and its anecdotal character, the aim of this study is threefold:

- To examine, in a systematic way, the presence of those external and internal variables identified in the literature.
- To ascertain whether they are peculiar to high-ability young women or to young women of every ability.
- To ascertain which, if any of these identified variables, is the most important.

The data analysis associated with this study is quantitative. Self esteem has been identified by the Coopersmith SEI and vocational interest by Holland’s VPI. The dimensions of aspiration, interest and influence are addressed by the DMQ and examined within the framework of the research questions.
The data collection was progressive and gathered over a time span of six years. Frequency counts, cross tabulations and \(t\)-tests were used to describe observations, explore relationships and identify differences between groups on variables selected within the study. All three techniques are used in Study One.

The conventional choice of a significance level in order to accept or reject the hypothesis is usually an alpha of 0.01-0.05 (Ferguson1966) However the population in Study One is small \((n=112)\) with a sample cohort \((n=63)\). A small alpha is indicative of the caution of scientific investigators against rejecting a hypothesis when it is true, accepting it when it is false. A smaller population can yield valid predictions when externally determined risks are of little consequence (Guilford, 1965) Therefore a possibility or a suspended judgment between the probability levels of 0.10 and 0.01 is justified.

**Hypothesis**

For the quantitative section of this investigation, namely Study One, the following hypothesis was investigated.

“There is no difference between the two groups of young women, one defined as high-ability, the other control, in the variables influencing vocational choice examined in this investigation”

This enquiry thus addresses the following five questions.

- Is there a difference between the groups in the relationship between parental occupations and daughters’ vocational choice?
- Is there a difference between the groups in the influence of self-esteem on vocational aspirations and early vocational decision-making?
- Is there a difference between the two groups when vocational interest is measured on the VPI and does it reflect final career choice?
- Is there a change in the relative influence of the variables between the groups over the three years?
• Is there a difference between the groups in which variable is perceived by the subjects as being the most important?

Data Collection and Analysis.

Data was collected in three stages. The Coopersmith SEI, the Vocational Preference Inventory (VPI) and the Decision-making Questionnaire (DMQ) were administered to the subjects in Grades ten, eleven and twelve in both the high-ability and control groups in the first year of the study. The DMQ only was posted to the subjects in the following two years. In the third year of the study only Grade 12 remained at school. The other subjects were completing further education, were within the work-force or were unemployed.

The total number of families involved in the study was 112. Of these 63 had daughters in the highly-able cohort. The control group comprised 49 families. The subjects were selected from a variety of school systems. They attended independent schools as well as government schools.

The DMQ was used to collect demographic data on the families. Questions relating to the birthplace of the parents as well as their occupations were asked, the purpose being to establish the homogeneity of the population. Questions directly associated with socio-economic status were not included, firstly because the respondents to the questionnaire were adolescent school girls and possibly unaware of their parents financial affairs, and secondly because the focus of the study is career choice. Hence questions related to income were perceived to be distracting and/or inappropriate. Because the subjects attended school in middle class suburbs in a capital city and a regional city, it is reasonable to assume that all of the subjects’ families would be classified as being within the lower to upper middle class range of the Australian populace.

Results
A total of 112 students were involved in this investigation, sixty-three in the sample group and forty-nine in the control cohort. Overall homogeneity was indicated by the variables of parental birthplace and occupations and there were marked similarities in the two groups. Australian born mothers in the sample group comprised 66% (n=42) compared to 73% (n=36) of the mothers in the control group. Within the sample English born mothers comprised 9.5% (n=6) compared to 8.2% (n=4) of the control mothers. Of those mothers born in Asia, 9.5% (n=6) came from the sample group and 6.1% (n=4) from the control group. The birthplace of other mothers in the sample was Europe (n=3), USA (n=3), New Zealand (n=2) and Ireland (n=1). Australian born fathers comprised 65% (n=41) of the sample group compared to 85.7% (n=42) in the control group. Asian born fathers comprised 7.9% (n=5) of the sample group of fathers compared to 2.0% (n=2) of control cohort fathers. Other birth countries represented in the sample were England (n=5), Europe (n=5) and USA (n=1)

Within the sample group 34.9% of mothers were defined as having careers classified as professional by the Australian Standard Classification of Occupations (ASCO) compared to 38.8% in the control group. Of the sample, 14.3% of parents were clerks compared to 12.2% of the control parents. Unemployed (home duties) mothers in the sample group made up 14.3% not at all that different from 18.4% in the control group. Fathers' occupational status was not dissimilar. Of the fathers in the sample group, 25.4% were in managerial positions compared 24.4% of the control fathers. Professionals comprised 42.9% of sample fathers compared with 40.8% of the control fathers. Occupations in trades accounted for 9.5% of the sample fathers and 14.3% of the control fathers. On the basis of these percentages it was concluded that the two groups demonstrated similar characteristics, excepting on the criteria of paternal birthplace.

**Self-esteem, aspiration and vocational decision-making.**

The School Form of the CSEI was used to identify self-attitudes in four areas; peers, parents, school and personal interests. Designed to measure evaluative attitudes in social relationships, relationships with the family and the academic world, the school form of the CSEI used in this study it yields a total score for overall self-
esteem as well as four separate score for the subscales. The subscales for each area are, respectively, Social Self-Peers, Home-Parents, School- Academic, and General-Self. These subscales identify differences in self-esteem within different areas of experience.

To compare the means of the sample and control in each subscale of the Coopersmith Self-Esteem Inventory, $t$-tests for independent groups were used, the results are shown in Table 4.1.

### Table 4.1 Summary of $t$-test differences based on self-esteem.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Home</td>
<td>4.4921</td>
<td>2.409</td>
</tr>
<tr>
<td>Gen</td>
<td>17.365</td>
<td>4.956</td>
</tr>
<tr>
<td>School</td>
<td>5.0635</td>
<td>2.054</td>
</tr>
<tr>
<td>Social</td>
<td>5.5714</td>
<td>2.077</td>
</tr>
<tr>
<td>Total</td>
<td>64.2857</td>
<td>18.039</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

The school sub-scale of the CSEI represents issues relating to self-attitudes in the environment of school, and toward learning. Academic perceptions of self or how one perceives oneself as a student is a construct of the school environment (Holland, 1985). It is recognized in the literature that gifted students sometimes have more positive ‘academic selves’ than they do ‘social selves’ (Davis & Rimm, 1985).

This view was supported by the findings as shown in Table 4.1. The school self-esteem of the high-ability group was not significantly different to that of the average control cohort. There was a significant difference between the groups, high-ability and control in the sub-scale “social self-esteem” however. The high-ability girls had significantly lower social self-esteem than the control group and the null hypothesis could be rejected.

(c) Sandra Lea-Wood, 2003. 84
A sizable minority, 42.9% of the students in the sample, were educated in single sex schools. There was found to be no significant difference between the highly-able young women in single-sex schools (n=27) and those girls who were being educated in co-educational schools (n=36) in total self-esteem ($t = 36, p=.720$). It is of interest to note however that a significant difference between the groups was found in the area of “school self-esteem” ($t = 1.68, p=.097$).

Self-attitudes that relate to the atmosphere of home and family are represented in the sub scale “home self-esteem”; that is, the self-esteem generated by the immediate family as distinct to that of the individual’s perception of self. Highly-able adolescent girls may have poor home self-esteem compared to their average classmates who may not have the same degree of perceived parental expectations of success imposed on them. As indicated in Table 4.1 there was a significant difference between the groups in the “home self-esteem” sub-test, the control group having a higher score.

The subscale “general self-esteem” relates to self-attitudes in general. As indicated in Table 4.1, no significant difference between the sample and control was indicated when general self-esteem was measured.

The sub-test “social self-esteem” is representative of the individual’s perception of self when measured as a construct of societal values and expectations. Card et al., (1980) reported that early socialization by parents, teachers and others has been shown to have a profound impact on women failing to reach their full potential when predicted achievement is compared with actual achievement. As shown in Table 4.1, the social self-esteem score was significantly different between the two groups. The control group had significantly higher social self-esteem than did the high-ability girls. This result would appear to indicate that the high-ability girls did have poorer societal perceptions of themselves than the control cohort.

The literature identifies a relationship between individuals with high self-esteem and the ability to make early vocational decisions. High self-esteem is also acknowledged in the literature as being a predictor of high vocational aspirations (Casey & Shore, 1998). So that this premise could be examined, scores in the upper
quartile (>= 75) on the Coopersmith SEI which are indicative of high total self-esteem, were extracted. As shown in Table 4.2 the scores of nineteen students from a possible sixty-three in the sample fell into this range (30.15%). Within the control group, the scores of twenty-four students from a possible forty-nine indicated high self-esteem (48.97%).

Table 4.2 Means, Standard Deviations and percentages for students with self-esteem scores => 75

<table>
<thead>
<tr>
<th></th>
<th>Sample (n=19)</th>
<th></th>
<th>Control (n=24)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>%</td>
<td>Mean</td>
</tr>
<tr>
<td>(30.15%)</td>
<td>84.211</td>
<td>6.860</td>
<td>1.574</td>
<td>85.583</td>
</tr>
</tbody>
</table>

High self-esteem and early vocational decision-making were observed over the three years using frequency data. The frequencies for the sample and control groups were examined separately, and are shown in Table 4.3.

Table 4.3 Percentage of students having self-esteem scores =>75 who made early vocational decisions.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Year 1</td>
<td>9</td>
<td>47</td>
<td>11</td>
<td>45</td>
</tr>
<tr>
<td>Year 2</td>
<td>12</td>
<td>63</td>
<td>17</td>
<td>70</td>
</tr>
<tr>
<td>Year 3</td>
<td>10</td>
<td>52</td>
<td>9</td>
<td>37</td>
</tr>
</tbody>
</table>

The number of students who had made a vocational decision regressed for both groups in the second and third year of the investigation. Nine young women in the sample cohort out of a possible nineteen had made a career decision in the first year of the study. Ten high-ability students had made no firm decision. Similarly, of the girls in the control group whose total self-esteem score was in the fourth quartile approximately half out of a possible twenty-four had made a career decision in the first year of the study. Thirteen students within the control group having high self-esteem had made no decision or were undecided.

There appears to be very little difference between the groups when the relationship between high self-esteem and vocational decision-making is observed. Both sample and control groups follow similar patterns. Therefore in this investigation high-self-esteem is not predictive of early vocational choice.

The literature reporting that students with positive self-esteem tend to make earlier vocational decisions suggests that the converse might be true. The argument is posed that students who are shy and lacking in self-esteem would be likely to encounter problems and delay decision-making. So that the relationship, if any, between self-esteem and vocational decision-making could be viewed in a wider frame of reference, the frequency Tables for all subjects having “low to medium” (= <50) total self-esteem scores were identified and their decision-making progress observed.

Those girls with low to medium total self-esteem (n=12) in the sample fell within this category. Eight of the control group had medium to low self-esteem. In year one, only two girls in the sample, out of the possible eight with total self-esteem scores below 50 had made a career decision. Six students out of the possible six from the control group with total self-esteem scores of less than 50 had made a firm career decision. No student in the control group said that they were undecided, they elected either yes or no.

These results offer a far from simple view. They indicate that for females with high self-esteem there appears to be little difference between the groups in the relationship between self-esteem and early vocational choice. However when examining students with poor self-esteem those in the control group still appear able to make viable vocational decisions whereas the high-ability group were not.

*Longitudinal implications in decision-making.*

---

The reporting of the data is both cross-sectional and longitudinal. The information is presented graphically in Figure 4.1. Study One spans three years in the career decision-making of the students. The intent of the longitudinal aspect is to observe change. In considering these results, attention is drawn to the missing data in the third year of the study. A sample cohort of 46 and a control group of 35 necessitates these results be viewed with prudence. Bar Charts have been examined to gain further insight into the results.

First year of study.

As shown in Figure 4.1, (Grades 10, 11 and 12) In the first year of the investigation the control cohort enrolled in Grades 10 and 11 appeared able to make earlier vocational decisions than did the sample group.

![Figure 4.1 A comparison of vocational decision-making between the groups in the first year for both the sample and control (%)](image)

Within the Grade 10 group, 32 %, of the sample compared to 40% of the control group had decided upon a vocation. In the Grade 11 group 31% of the sample compared to 66 % of the control group had decided on a career. In the Grade 12 the groups were very similar in composition, 59% of the sample and 57 % of the control group had made a vocational choice.

Second year of study.

A steady increase in the vocational commitment within the highly-able group can be seen from the Bar Graph presented in Figure 4.2. Further, from year one to
year two there is a change in the relative position of the two groups. Within the control group the scores indicate an increased level of career indecision while a firmer position was taken by the sample girls.

Figure. 4.2 A comparison of vocational decision-making between the in the second year for both the sample and control (%).

Of the Grade 11 sample, 42.9% were decided about their career choice compared to the year before where 32% had decided. Of the control cohort 80% had decided on their vocational trajectory compared to 32 % the previous year. Of the Grade 12 sample, 60% had decided on a career compared to 32% the previous year. Of the control group 57.1% had decided on a vocational choice although the previous year 66 .7 % of the respondents said that they had decided on a career. The shift in vocational decision-making over the three years indicates the steady increase of the sample group whereas the control groups were less decisive.

Third year of study.

As shown in Figure 4.3 by Grade 12, 48% of the sample had decided upon their vocation compared to 42.9 % the year before and 32 % the first year. This compares with the steady upward incline found in the decision-making of the sample group in the other years. Of the control group 40% had made a definite vocational choice compared to 42% the year before and 32% in year one of the study.
These frequencies identify a linear rise toward ultimate vocational choice within the sample group. Of the Grade 12 control group, 40% said they had made a definite career decision compared to 80% the previous year and 40% in the first year. These results would suggest that by Grade 12 there was a greater degree of career indecision within the control group. The apparent indecision among average girls may be attributed in part to their not receiving sufficiently high scores in the Victorian Certificate of Education (VCE). Less than expected results would preclude them from many of the career options and aspirations they once held.

**Vocational interest as a predictor of final career choice.**

The purpose of this study was to examine the progression across time of vocational decision-making as a means of identifying relevant influences on those decisions. Matching interests with the characteristics required by specific occupations has a long tradition in vocational psychology. The Vocational Preference Inventory (VPI) identifies vocational interest and was employed to address the research question regarding the role of vocational interest in career choice. Data from the VPI also enabled a relationship, if any to be identified between parental occupations and their daughters’ final career choice. In order to execute this, occupational codes
established in the Australian Standard Classification of Occupations (ASCO) document were matched to corresponding Holland categories in the ASCO draft document of 1983.

**Analysis of occupational data.**

The VPI is comprised of six scales relevant to vocational interest and eight dimensions relevant to personality. Because this study is analyzing interest in vocational choice the eight categories of the VPI index will be reported. These are the six interest-based scales of *Realistic, Investigative, Artistic, Social, Enterprising and Conventional* and the personality scales of *Masculinity/Femininity* and *Status*. The two personality scales will be analyzed as they are relevant to this investigation. The literature identifies the perceived pressure for high-ability young women to focus on high status careers (Silverman, 1991). A congruence between the selection of non-traditional careers and Holland *Masculinity/Femininity* type was found in the Wolfe and Betz study of 1981.

The VPI professional manual has been the source of defining high scores. High scores refer to T-scores above 60 and suggest high interest in the vocational area nominated by the inventory (Holland 1985). Descriptive statistics based on the raw scores for each VPI category are specified in Table 4.5.

**Table 4.5  Means, standard deviations, percentages and standard errors of T-scores (>=60).**

<table>
<thead>
<tr>
<th>Holland categories</th>
<th>N</th>
<th>%</th>
<th>Mean</th>
<th>Std dev</th>
<th>SE</th>
<th>N</th>
<th>%</th>
<th>Mean</th>
<th>Std dev</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>6</td>
<td>9.6</td>
<td>6.33</td>
<td>1.033</td>
<td>0.422</td>
<td>7</td>
<td>14.2</td>
<td>7.00</td>
<td>1.732</td>
<td>0.655</td>
</tr>
<tr>
<td>Investigative</td>
<td>15</td>
<td>23</td>
<td>11.60</td>
<td>2.098</td>
<td>0.542</td>
<td>7</td>
<td>14</td>
<td>9.571</td>
<td>1.618</td>
<td>0.612</td>
</tr>
<tr>
<td>Artistic</td>
<td>4</td>
<td>6.4</td>
<td>13.00</td>
<td>1.414</td>
<td>0.707</td>
<td>3</td>
<td>6</td>
<td>13.00</td>
<td>1.00</td>
<td>0.577</td>
</tr>
<tr>
<td>Social</td>
<td>5</td>
<td>8</td>
<td>11.80</td>
<td>1.304</td>
<td>0.583</td>
<td>5</td>
<td>10</td>
<td>12.00</td>
<td>1.304</td>
<td>0.583</td>
</tr>
<tr>
<td>Enterprising</td>
<td>7</td>
<td>12</td>
<td>11.00</td>
<td>1.633</td>
<td>0.617</td>
<td>7</td>
<td>14</td>
<td>10.429</td>
<td>0.796</td>
<td>0.369</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>5</td>
<td>10.00</td>
<td>1.00</td>
<td>0.577</td>
<td>3</td>
<td>6</td>
<td>7.667</td>
<td>1.155</td>
<td>0.667</td>
</tr>
</tbody>
</table>

Across the six categories the distribution was not dissimilar. As shown in Table 4.5 a number of subjects in the current study had high raw scores suggesting an interest in *Investigative* vocations. This held true for both groups but was more pronounced in the sample. Vocations within the *Enterprising* category were the next most highly represented for the sample. *Realistic, Social, Artistic* and *Conventional* vocational interests were evenly and thinly spread for both groups.

Of the number of girls falling into the categories within the sample cohort, 9.6% of the students had high T-scores in *Realistic* vocational interests compared to 14.2% within the control group. Of the sample 23.8% had high T scores in *Investigative* vocational interests. Of the control cohort 14.2% had high T scores. *Artistic* vocational interests within both groups were very similar. *Artistic* interests were nominated by 6.4% of the sample and 6% of the control group. High interest in *Social* occupations were held by 8% of the sample compared to 10.1% of the control cohort. Interests in *Enterprising* vocations were nominated by 11.2% of the students in the sample who had high T-scores.

This study only examines two aspects of personality identified in the VPI, *Masculinity/Femininity* and *Status*. The aspects of personality associated with gender and status were used in this study because of their relevance to vocational choice. High scores on the *Masculinity/Femininity* scale generally identifies young women who are most likely to choose masculine occupational roles and to enter occupations dominated by men (Holland 1985). High scores in the *Status* scale are indicative of vocational choices with a high prestige ranking and a need for upward mobility. Holland (1985) claims that high scores on the *Status* scale are also associated with self-confidence and self-esteem. It could be expected that the young women with positive self-esteem and not bound by traditional female roles would select occupation in medicine and law.

Many careers seen as being high status are dominated by men. The equal opportunity and affirmative action policies in the community in general, and in the schools in particular, were set out to encourage bright young women to take up high status careers such as medicine and law.

Frequencies for subjects with high T-scores on the $M/F$ scale (raw score=>8), were compared to frequencies for traditional/non traditional vocational choices. Holland (1967) suggests that people with a high score in this category tend to choose non-traditional careers. Non-traditional careers are those vocations not usually chosen by females. Careers were identified as traditional or non-traditional on the basis of an examination of the 1996 Australian census (ABS Clib, 1996) which identified the number of males and females employed in a variety of occupations in the state of Victoria. This inspection of the census enabled the researcher to attach a traditional or non-traditional descriptor to each of the final career choices nominated by all of the subjects in this investigation.

### Table 4.6 Crosstabulations of all students selecting traditional and non-traditional careers.

<table>
<thead>
<tr>
<th>Sample (n = 63)</th>
<th>Control (n= 49)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional observed</td>
<td>28 (44.4%)</td>
<td>33 (67.3%)</td>
</tr>
<tr>
<td>Expected</td>
<td>34.6</td>
<td>26.4</td>
</tr>
<tr>
<td></td>
<td>-1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Non-trad. Observed</td>
<td>35 (55.5%)</td>
<td>15 (30.6%)</td>
</tr>
<tr>
<td>Expected</td>
<td>28.4</td>
<td>21.6</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>-1.4</td>
</tr>
</tbody>
</table>

Cross tabulations in Tables 4.6 and 4.7 show a relationship between the sample and control groups when examining traditional and non-traditional career choice. Standardized residuals clarify the source and strength of this relationship. It is generally accepted that a standardized residual outside the range of $-2.0$ and $+2.0$ will denote a significant relationship. There is a relationship in the direction of the data but it could not be accepted as a strong one. When examining the observed cell frequencies it can be concluded that high-ability young women are marginally more likely than the control group to chose non-traditional vocations.

Table 4.7 Crosstabulations showing students with high *Masculinity/Femininity* scores T =>60 choosing non-traditional vocations.

<table>
<thead>
<tr>
<th>Sample (n = 26)</th>
<th>Control (n= 14)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional-Observed</strong></td>
<td><strong>Expected</strong></td>
<td><strong>Traditional-Observed</strong></td>
</tr>
<tr>
<td>10 (38.4%)</td>
<td>13.0</td>
<td>10 (71.4%)</td>
</tr>
<tr>
<td>- .8</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td><strong>Non-trad-Observed</strong></td>
<td><strong>Expected</strong></td>
<td><strong>Non-trad-Observed</strong></td>
</tr>
<tr>
<td>16 (61.5%)</td>
<td>13.0</td>
<td>4 (26.6%)</td>
</tr>
<tr>
<td>.8</td>
<td>-1.1</td>
<td></td>
</tr>
</tbody>
</table>

Within the sample group 41.2% (n=26) of the subjects had high T-scores in the M/F scale compared to 28.5% (n=14) of the control subjects. A large percentage of students, 61.5%(n=16) in the sample cohort from a possible twenty-six high-ability girls with high M/F scores, did chose non-traditional career choices compared to 28.6% (n=4) from a possible fourteen of the control cohort.

In examining the observed cell frequencies in Table 4.7, it can be concluded that high-ability young women with high *Masculinity/Femininity* scores on the VPI are more likely than the control group to chose non-traditional vocations. The relationship is not a strong one however.

These figures would suggest that although students with high M/F scores did indeed select non-traditional careers, some subjects in the sample group with high M/F scores also chose traditional vocations. However it would appear that regardless of having high M/F scores the majority of the average schoolgirls in the control group chose traditional occupations

The dimension of *Status* within the Holland VPI personality profiles is indicative of vocational choices with high prestige ranking. Holland believes that they may also represent a crude measure of the need for upward mobility and as such are relevant to vocational aspirations. Within the sample, 22.1% (n=14) had a “high” score in the *Status* sub-scale. However 28.6% scored in the “medium to high” range. This would suggest that half of the young women in the sample cohort scored in the medium and high range. This can be compared to 12.2% of young women in the

control group scoring in the “high” range and 20.2% in the “medium” range: that is, around one-third.

In order to answer the research question regarding vocational interest measured on the VPI reflecting final career choice, it was necessary to identify the highest individual VPI vocational interest score. The highest individual T-score (raw score =>60) for each student in the two cohorts was identified and compared to the final career choice. These results are presented in both graph and tabular form.

**Figure 4.4** Comparison of highest individual RAISEC scale for sample and control groups. (%)

![Graph showing RAISEC scale comparison](image)

**Table 4.8** Number of subjects and percentages for the highest T-score for each student.

<table>
<thead>
<tr>
<th>VPI category</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Realistic</td>
<td>9</td>
<td>14.2</td>
</tr>
<tr>
<td>Investigative</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td>Social</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Artistic</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Enterprising</td>
<td>13</td>
<td>20.6</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

As indicated in Figure 4.4 and Table 4.8, apart from Realistic and Conventional interests, the control group have a relatively flat VPI profile. The high-ability cohort have predominantly Investigative and Enterprising vocational interests. Thirty-five percent of highly-able students (n=22) had high Investigative vocational interests compared to 20.4% (n=10) of the control cohort. The next most strongly represented category within the sample cohort was that of Enterprising. Within the
control group, *Enterprising, Investigative and Social* interests were more evenly spread. Within the sample cohort, the *Social* scale was nominated by 12.7% of the group compared to 18.4% of the students within the control cohort. The *Enterprising* scales were represented more strongly in the control cohort than in the sample. Interests in *Enterprising* vocations accounted for 20.6% of the sample and 26.5% of the control group.

The study seeks to examine and identify an expected continuum or connection from the initial vocational interests identified through the VPI to the actual career choices of the young women. Again the Australian Standard Classification of Occupations (ASCO) Working Draft 1983 was used to assign Holland codes to the final career choice nominated by the two groups. The frequency Tables pertaining to Holland codes attached to the individual’s final career choice, together with the individual subject’s Holland code for their highest T-score on the RIASEC scale of the VPI, are summarized in Figures 4.5, 4.6 and Table 4.9.

**Table 4.9 VPI profile and final career choice.**

<table>
<thead>
<tr>
<th>Vocational Interest</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest VPI score (n=63)</td>
<td>%</td>
</tr>
<tr>
<td>Realistic</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Investigative</td>
<td>22</td>
<td>34.9</td>
</tr>
<tr>
<td>Artistic</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Social</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Enterprising</td>
<td>13</td>
<td>20.6</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Apart from Realistic interests no marked difference between the groups was observed when examining the VPI profile and final career choice. Although the Realistic scale was the highest individual score for 14.3% (n=9) of the sample cohort, only 3.2% (n=2) actually selected Realistic careers. Within the sample, 34.9% (n=22) of the group had their highest individual RIASEC score in the Investigative scale. The same percentage of the sample (34.9%), selected vocations which were classified Investigative in the ASCO document of 1983. The Enterprising dimension was the highest scale for 20.6% (n=13) of the sample and 23.8% (n=15) of this group actually selected Enterprising vocations. The Holland scale Social was the highest individual score for 12.7% (n=8) of the sample but 17.5% (n=11) of the group actually chose Social vocations. The Artistic scale was the highest score for 12.7% (n=8) of the sample group and 17.5% (n=11) of the subjects chose vocations within the Artistic domain.

Within the control group the consistency between highest RIASEC score and the final career choice also was similar. The Realistic scale was the highest individual score for 12.2% of the control group compared to 14.6% who chose Realistic vocations. The Social domain was the highest scale for 20.4% of students with 18.4% of subjects selecting a Social vocation. Although 26.5% had their highest score as Enterprising, 18.4% of this group actually chose vocations that were classed as Enterprising. There appeared to be a slight shift in the Investigative scale with 20.4% of students having high scores in this area on the VPI with 26.5% of this group choosing Investigative careers.

The VPI predicted career choice in both groups. There was however a particularly high degree of congruence in the Investigative, Artistic, Enterprising and Social categories for all subjects in the sample. There was a small mismatch in the translation of Realistic and Conventional interests into comparative careers. Realistic interests were nominated by 14.3% (n=9) of the students. However only two students chose actually Realistic careers. Both of these were engineers. Three students had Conventional interests. Five students nominated vocations classified as Conventional.
The highest VPI score and final career choices for the control group were more evenly spread over the categories. In this the match of interest and final career choice was less pronounced. There was a shift in preferences when vocation interests in the Enterprising category (n=13) did not translate into Enterprising careers (n=9). The slight change in the Social, Artistic and Realistic interests appears to convert Conventional and Investigative careers. It would seem reasonable to believe that the number of girls in the control group nominating careers in the natural sciences would account for the higher percentage of average girls classified as having Investigative occupations. On the basis of these findings the null hypothesis could be rejected.

This study observed, over time, any changes made in the vocational choice initially nominated, and the final vocational choice of the subjects. The researcher matched the Holland codes identified in the Australian Standard Classification of Occupations (ASCO) with the nine ASCO categories and manually assigned them to all of the vocations nominated by the subjects.

### Table 4.10 Stability of career choice based on ASCO codes.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Career Choice Initial</td>
<td>%</td>
</tr>
<tr>
<td>Managerial</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Professional</td>
<td>47</td>
<td>74.6</td>
</tr>
<tr>
<td>Para-profess</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Clerk</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sales/service</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Operator/driver</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Home/unemployed</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Vocational choices were aggregated into ASCO categories and comparisons were made on a case by case basis of the subjects’ vocational choices, or nominations, in the first year of the study with actual vocational choices from the final year of the study. The frequency Tables for the sample and control groups were then examined separately.
As indicated in Table 4.10, professional careers were nominated by 74.6% (n=47) as an initial career choice by the sample, and para-professional vocations 14.3 % (n=9). When examining final career choice (FCC) however it was found that although 88.9 % (n= (56) of the sample had nominated vocations in the professional domain, the next highest group, 4.8% (n=3) were in the managerial category and 3.2% (n=2) were classified para-professional. The drift from para-professional and occupations to professional and managerial vocations was observable in the control cohort also.

Specific cases within the data were examined to facilitate a better understanding of how this drift eventuated. When early career choice was examined, actual careers nominated in the para-professional area were those of nurse, ship’s pilot, sportsperson and policewoman. Only one high-ability girl nominated a career in the managerial category. When final career choice was examined, only the sportswoman predicted her vocational path. It was apparent that the other three had changed their vocational choices in order to aim for managerial positions. The young woman who had nominated a pilot as her initial career for example had decided to become a commissioned officer in the air force.

Of the control cohort, 60.4% nominated professional careers as their early career choice. Careers in the para-professional category were nominated by 14.6% of the students. In the final year of the study, 70.8% of the control cohort still nominated professional careers. However 12.5 % (n=6) of the control group now nominated careers in sales and service. This could be taken as a more realistic approach to vocational choices by the these girls in the control cohort who may have had their plans dampened by poor academic marks at school or societal expectations for them to become wives and mothers.
**Parental occupation and vocational choice.**

Table 4.11 Parents’ occupation and daughters’ final career choice using ASCO codes.

<table>
<thead>
<tr>
<th>Career</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mn</td>
<td>%</td>
</tr>
<tr>
<td>Managerial</td>
<td>6</td>
<td>9.5</td>
</tr>
<tr>
<td>Professional</td>
<td>22</td>
<td>34.9</td>
</tr>
<tr>
<td>Para-profess</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Clerk</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Sales/service</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>Operator/drive</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Home/unempl</td>
<td>9</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Mn= number of mothers.  
Fn= number of fathers.  
Dn= number of daughters.

As indicated in Table 4.11, managers and administrators made up 25.4% (n=16) of the sample fathers. However only 4.8% (n=3) of the daughters in the sample group nominated managerial careers. The considerable inconsistencies overall and within the managerial group in particular is a feature of these findings. The professions were represented by 42.9% (n=20) of the fathers but 88.9 % (n=56) of their daughters nominated professional vocations. Fathers who were para-professional constituted 3.2% (n=2) of the sample with 3.2% (n=2)of daughters also nominating para-professional vocations. Careers in sales and service were held by 4.8% (n=3) of sample fathers with 3.2% (n=2) of daughters electing vocations within this classification. None of the daughters nominated clerks, machine operators or labourers as vocational options.

Within the control group, although 22.4% (n=11) of fathers were managers, no daughter nominated a managerial vocation as her final career choice. Professional fathers within the control group accounted for 40.8% (n=20) of the population. Professional occupations were nominated by 69.4% (n=34) of their daughters.

The results for mothers’ occupation and daughters’ final career choice were not dissimilar. Ten of the sample mothers and nine of the control mothers did not work outside of the home. The majority of mothers in both the sample and the control groups were employed in roughly the same occupational areas as fathers. An exception was that of managers and administrators. Very few of the mothers in the sample (n=6) or the control (n=1) were in this category.

These results indicate that although the actual vocation of parent and daughter are not the same, they do tend to be in the same general occupational group.

Because some highly-able young people believe that by rejecting their own talents and their parent’s value system they are confirming their independence (Buescher, 1991) parental occupations and their daughters’ career aversions were examined.

Table 4.12 Parents’ occupation and daughters’ career aversion using ASCO codes.

<table>
<thead>
<tr>
<th>Career</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mn</td>
<td>%</td>
</tr>
<tr>
<td>Managerial</td>
<td>6</td>
<td>9.5</td>
</tr>
<tr>
<td>Professional</td>
<td>22</td>
<td>34.9</td>
</tr>
<tr>
<td>Para-profess</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Clerk</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Sales/service</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>Operator/drive</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Home/unempl o</td>
<td>9</td>
<td>14.3</td>
</tr>
</tbody>
</table>

The parents’ occupations and daughters’ career aversions are presented in Table 4.12. A large percentage of the subjects in both the groups nominated professional careers as what they would not choose. This appears to contradict the

earlier data. Because of the large number of vocations that are in classed “professional” the data could not discriminate sufficiently. Of particular interest however was the number of high-ability girls (n=16) who reported that a career in management was one they would never undertake. This number matched the number of high-ability fathers in managerial positions. This phenomenon will be discussed in relation to the fathers’ influence, positive or indeed negative, in the in the results section of Study Two.

**Context and vocational decision-making.**

The DMQ was developed by the researcher to address research questions relating to vocational aspirations, and the perceptions of relative interest and influence exerted by mother, father, teacher, friends and the media. The shift from *perceived interest*, to *perceived influence*, to actual vocational suggestions was addressed in the DMQ. The arguments in the literature suggest that there is a very different experience between high-ability girls and average girls. This measure was an attempt to identify and estimate these differences.

An independent samples *t*-test was used to identify the differences of each of the identified variables between the highly-able and control groups. Over the three years a limited number of variables were statistically dissimilar between the sample and the control cohorts. The data has been reported in both graphic and tabular form.

In the first year of the study, eight out of the twenty questions on the DMQ indicated a significant difference between the two groups. These differences were associated with vocational aspiration, friends’ interest, mothers’, fathers’ and teachers’ vocational suggestions, the degree of difference between the views of the mother and daughter and the influence of media role models. In the second year of the data collection six items relating to vocational aspirations, teachers’ suggestions, mothers’, teachers and friends views were statistically different between the groups. In the third year there were only two areas of statistical difference between the groups. These related to the fathers’ interest in career choice and expectations of advancement in the chosen vocation.

Table 4.13 Summary of t-test in group differences based on vocational aspirations over the three years of Study One (I will do further study after school).

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
<th></th>
<th>Sample</th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>4.7143</td>
<td>0.607</td>
<td>0.076</td>
<td>48</td>
<td>4.2292</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.4851</td>
<td>1.325</td>
<td>0.191</td>
<td>109</td>
<td>2.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.01</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.7500</td>
<td>0.548</td>
<td>0.073</td>
<td>43</td>
<td>4.2791</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.4709</td>
<td>1.120</td>
<td>0.171</td>
<td>97</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>45</td>
<td>4.2444</td>
<td>1.132</td>
<td>0.169</td>
<td>34</td>
<td>4.3529</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.1085</td>
<td>1.041</td>
<td>0.170</td>
<td>77</td>
<td>-.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * p<01

Figure 4.7 I will do further study %.

Figure 4.8 I expect my career to be stimulating %.

(c) Sandra Lea-Wood, 2003. 103
Table 4.14 Summary of t-test in group differences based on vocational aspirations over the three years of Study One (I expect my career to be stimulating).

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>4.7460</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.5893</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>4.6739</td>
</tr>
</tbody>
</table>

Note: * p<0.01.

Table 4.15 Summary of t-test in group differences based on vocational aspirations over the three years of Study One (I expect prospects of advancement).

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>4.4286</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.3036</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>4.1404</td>
</tr>
</tbody>
</table>

Note: * p<0.1

As shown in Tables 4.13, 4.14 and 4.15, in the first year of the study the two questions relating to the dimension of vocational aspiration, “I will do further study after school” and “I expect my career to be stimulating” differentiated sample from control. “I expect prospects of advancement” was not statistically different between the groups until the third year.

The differences in regard to the two dimensions relating to vocational aspirations “I will do further study after school” and “I expect my career to be stimulating” held in year two. This would suggest that the subjects were consistent in how they perceived their vocational aspirations. In year three however there was statistical difference between the groups in only one of the three questions relating to aspiration “I expect prospects of advancement”. This question was not different between the groups in the first two years.

Such a result could be expected as a function of the young women’s’ uncertainty of what lay beyond study. At this stage in the investigation all the subjects were still at school. Doubts about academic results, together with then current unreliable job prospects may have caused the young women to be unwilling to project too far ahead. This similarity of uncertainty between the groups in the first two years could also be a reflection of the vocational indecision resulting in an inability to choose a career much less expect promotion. In the third year the young women who continued to be involved in the study had left school and were either studying or employed. It could be expected that the young women who lacked vocational aspiration could be found in the missing data (n=31). However this assumption is questionable as only three young women found within the missing data also had low aspirations in the first year of the study.

**High self-esteem as a predictor of high vocational aspirations**

For the purpose of this study, high vocational aspirations were measured by a response of ‘most important’ to all three of the questions on the DMQ relating to further study, stimulation and promotion. High self-esteem was indicated by scores in the fourth quartile on the Coopersmith SEI. Within the sample cohort thirty-one out of a possible sixty-three students had very high vocational aspirations. However only nineteen students had high self-esteem scores. Within the control group, fifteen students from a possible forty-nine had very high vocational aspirations. Twenty-four girls in the control group from a possible forty-nine had high self-esteem scores. Although the girls in both groups with high self-esteem did have high vocational aspirations these results would suggest that high self-esteem did not predict high vocational aspirations for either group.

*To whom would you go for advice?*

In the first year of Study One, the subjects were asked from whom they would seek career advice. Many of the participants nominated at least three potential advisors. When the frequency Tables were examined, 45.2% of the sample cohort nominated “career adviser” as their first choice, 30.2% said “parents” were their
second choice of advisor and 29% nominated “people in the profession/job” as their third choice.

Of the control subjects, 44.2% also felt that “career advisers” were the first point of contact. The second choice of the control group, 21.4%, would then seek the advice of parents. The third choice of this cohort was evenly distributed between career advisers, 30%, friends 10%, and nominated relatives and “friends of friends”, 30%. Both groups looked to careers teachers initially and then to their parents for vocational advice. When looking for further advice, the sample tended to choose people working in that particular job, whereas the control group appeared to place more importance on the advice of friends and relatives.

Over time this perception did not change markedly. In year two of the study, parents and teachers still assumed importance for both the sample and control groups. In the second year of the study “people in the job” also became an important reference for subjects in both the control cohort and the sample. Previously people in the job had only assumed importance for the high-ability cohort. Missing data from both the control and sample groups made the data from year three less meaningful.

Perceived interest and influence on vocational choice over time.

Social influencers are factors within the subject’s environment which may play a decisive role in the vocational trajectory of adolescents. The shifts from perceived interest to perceived influence by way of actual suggestions of career options are addressed within the framework of this investigation. Perceived influence is identified through direct questioning on the DMQ as well as the actual vocational suggestions made by parents, friends and teachers. The relative importance of role models in the media was also addressed as a social influencer of significance from the
wider community. As well as t-tests to identify differences between the groups, the
descriptive frequency Tables relating to the perceived role of the four variables
mother, father, teachers and friends were examined over the three years of the study
in order to and add further insight into those differences

The data was presented in both graphs and tables.
SUMMARY OF T-TESTS IN GROUP DIFFERENCES BASED ON INTEREST, INFLUENCE, SUGGESTIONS AND VIEWS OF MOTHER, FATHER, TEACHERS, ROLE MODELS AND FRIENDS.

Table 4.16 Summary of t-test in group differences based on perceived interest of mother over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>N</th>
<th>Mean</th>
<th>Mean Diff</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>63</td>
<td>3.9048</td>
<td>0.011</td>
<td>0.127</td>
<td>49</td>
<td>4.0408</td>
<td>-.1361</td>
<td>1.040</td>
<td>0.149</td>
<td>110</td>
<td>-.70</td>
<td>0.487</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.1607</td>
<td>0.869</td>
<td>0.116</td>
<td>43</td>
<td>4.3023</td>
<td>-.1416</td>
<td>0.989</td>
<td>0.151</td>
<td>97</td>
<td>-.76</td>
<td>0.451</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>4.1087</td>
<td>0.924</td>
<td>0.136</td>
<td>35</td>
<td>4.2571</td>
<td>-.1484</td>
<td>0.886</td>
<td>0.150</td>
<td>79</td>
<td>-.73</td>
<td>0.468</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.17 Summary of t-test in group differences based on perceived influence of mother over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>N</th>
<th>Mean</th>
<th>Mean Diff</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>63</td>
<td>2.5556</td>
<td>1.254</td>
<td>0.158</td>
<td>48</td>
<td>2.7917</td>
<td>-.2361</td>
<td>1.254</td>
<td>0.181</td>
<td>109</td>
<td>-.98</td>
<td>0.328</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.8750</td>
<td>1.176</td>
<td>0.181</td>
<td>43</td>
<td>2.9767</td>
<td>-.1017</td>
<td>1.185</td>
<td>0.181</td>
<td>97</td>
<td>-.43</td>
<td>0.672</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>3.0217</td>
<td>1.220</td>
<td>0.180</td>
<td>35</td>
<td>2.7714</td>
<td>.2503</td>
<td>1.190</td>
<td>0.201</td>
<td>79</td>
<td>.92</td>
<td>0.358</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.18 Summary of t-test in group differences based career suggestions of mother over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>N=62</td>
<td>Mean=3.3065</td>
<td>SD=1.288</td>
<td>SE=0.164</td>
<td>N=49</td>
<td>Mean=3.7959</td>
<td>Mean Dif=-.4895</td>
<td>SD=1.154</td>
<td>SE=0.165</td>
<td>df=109</td>
</tr>
<tr>
<td>Year 2</td>
<td>N=56</td>
<td>Mean=3.5000</td>
<td>SD=1.279</td>
<td>SE=0.171</td>
<td>N=43</td>
<td>Mean=3.7209</td>
<td>Mean Dif=-.2209</td>
<td>SD=1.368</td>
<td>SE=0.209</td>
<td>df=97</td>
</tr>
<tr>
<td>Year 3</td>
<td>N=46</td>
<td>Mean=3.5000</td>
<td>SD=1.261</td>
<td>SE=0.186</td>
<td>N=35</td>
<td>Mean=3.4286</td>
<td>Mean Dif=.0714</td>
<td>SD=1.220</td>
<td>SE=0.206</td>
<td>df=79</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.19 Summary of t-test in group differences based on difference between career views of mother and subject over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>N=61</td>
<td>Mean=2.6393</td>
<td>SD=1.403</td>
<td>SE=0.180</td>
<td>N=47</td>
<td>Mean=2.0426</td>
<td>Mean Dif=.5968</td>
<td>SD=1.301</td>
<td>SE=0.190</td>
<td>df=106</td>
</tr>
<tr>
<td>Year 2</td>
<td>N=51</td>
<td>Mean=2.4706</td>
<td>SD=1.391</td>
<td>SE=0.195</td>
<td>N=43</td>
<td>Mean=2.0000</td>
<td>Mean Dif=.4706</td>
<td>SD=1.113</td>
<td>SE=0.170</td>
<td>df=91</td>
</tr>
<tr>
<td>Year 3</td>
<td>N=46</td>
<td>Mean=2.5238</td>
<td>SD=1.435</td>
<td>SE=0.221</td>
<td>N=35</td>
<td>Mean=2.5758</td>
<td>Mean Dif=-.0519</td>
<td>SD=1.275</td>
<td>SE=0.222</td>
<td>df=73</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.20 Summary of $t$-test in group differences based on interest of the father over the three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Control N</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>62</td>
<td>3.3710</td>
<td>1.428</td>
<td>0.181</td>
<td>48</td>
<td>3.6350</td>
<td>-0.2540</td>
<td>1.104</td>
<td>0.159</td>
<td>108</td>
<td>-1.05</td>
<td>0.295</td>
</tr>
<tr>
<td>Year 2</td>
<td>55</td>
<td>3.6364</td>
<td>1.419</td>
<td>0.191</td>
<td>43</td>
<td>3.6744</td>
<td>-0.0381</td>
<td>1.375</td>
<td>0.210</td>
<td>96</td>
<td>-0.13</td>
<td>0.894</td>
</tr>
<tr>
<td>Year 3</td>
<td>45</td>
<td>3.4222</td>
<td>1.406</td>
<td>0.210</td>
<td>35</td>
<td>3.9429</td>
<td>-0.5206</td>
<td>1.211</td>
<td>0.205</td>
<td>77</td>
<td>-1.78</td>
<td>0.080 *</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.21 Summary of $t$-test in group differences based on the influence of the father over the three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Control N</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>62</td>
<td>2.3226</td>
<td>1.315</td>
<td>0.167</td>
<td>48</td>
<td>2.5745</td>
<td>-0.2519</td>
<td>1.281</td>
<td>0.187</td>
<td>107</td>
<td>-1.00</td>
<td>0.319</td>
</tr>
<tr>
<td>Year 2</td>
<td>55</td>
<td>2.5273</td>
<td>1.331</td>
<td>0.180</td>
<td>43</td>
<td>2.4419</td>
<td>0.0854</td>
<td>0.278</td>
<td>0.195</td>
<td>96</td>
<td>0.32</td>
<td>0.749</td>
</tr>
<tr>
<td>Year 3</td>
<td>45</td>
<td>2.6222</td>
<td>1.336</td>
<td>0.199</td>
<td>35</td>
<td>2.6571</td>
<td>0.0349</td>
<td>0.235</td>
<td>0.209</td>
<td>78</td>
<td>-0.12</td>
<td>0.905</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  Mean  SD  SE  N  Mean  Mean D  SD  SE  df  t-value  2-tail sig.</td>
</tr>
<tr>
<td>Year 1</td>
<td>62  2.7213  1.462  0.187  48  0.187  0.5287  1.391  0.201  107  -1.91  0.058  *</td>
</tr>
<tr>
<td>Year 2</td>
<td>55  2.9455  1.471  0.198  43  0.198  -1.1011  1.447  0.221  96  -2.34  0.735</td>
</tr>
<tr>
<td>Year 3</td>
<td>45  2.7778  1.506  0.224  35  0.224  -3.651  1.396  0.236  78  -1.11  0.270</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.23  Summary of t-test in group differences based on difference between career views of father and subject over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  Mean  SD  SE  N  Mean  Mean D  SD  SE  df  t-value  2-tail sig.</td>
</tr>
<tr>
<td>Year 1</td>
<td>59  2.5085  1.513  0.197  45  2.1304  0.3780  1.185  0.175  103  0.76  0.448</td>
</tr>
<tr>
<td>Year 2</td>
<td>50  2.2400  1.297  0.182  43  2.2558  -0.0158  1.329  0.203  91  1.21  0.231</td>
</tr>
<tr>
<td>Year 3</td>
<td>38  2.5263  1.572  0.255  32  2.4375  0.0888  1.366  0.242  68  0.25  0.804</td>
</tr>
</tbody>
</table>

Table 4.24  Summary of t-test in group differences based on interest of teachers over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  Mean  SD  SE  N  Mean  Mean D  SD  SE  df  t-value  2-tail sig.</td>
</tr>
<tr>
<td>Year 1</td>
<td>63  2.9841  0.992  0.125  49  2.8367  1.474  1.048  0.150  110  0.76  0.448</td>
</tr>
<tr>
<td>Year 2</td>
<td>56  2.8393  1.058  0.141  43  2.5814  1.279  1.052  0.160  97  0.76  0.231</td>
</tr>
<tr>
<td>Year 3</td>
<td>45  2.7333  1.147  0.147  35  2.9143  -1.1810  1.052  0.160  78  0.76  0.451</td>
</tr>
</tbody>
</table>

Table 4.25  Summary of t-test in group differences based on influence of teachers over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>62</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
</tr>
</tbody>
</table>

Table 4.26  Summary of *t*-test in group differences based career suggestions of teachers over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>62</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.27  Summary of *t*-test in group differences based on difference between career views of teachers and subject over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>59</td>
</tr>
<tr>
<td>Year 2</td>
<td>51</td>
</tr>
<tr>
<td>Year 3</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 4.28  Summary of *t*-test in group differences based on interest of friends over the three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>3.2381</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>3.1607</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>3.3478</td>
</tr>
</tbody>
</table>

Note: * denotes p<0.1

Table 4.29  Summary of t-test in group differences based on influence of friends and subject over the three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>1.9841</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.2321</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>2.4565</td>
</tr>
</tbody>
</table>

Table 4.30  Summary of t-test in group differences based on career suggestions of friends over the three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>2.5323</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.7857</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>2.5435</td>
</tr>
</tbody>
</table>

### Table 4.31  Summary of $t$-test in group differences based on difference between career views of friends and subject over the three years.

|       | Sample | | | | Control | | | | | | | | | |
|-------|--------|---|---|---|--------|---|---|---|---|---|---|---|---|---|---|
|       | N      | Mean | SD  | SE | N      | Mean | Mean D | SD  | SE | df | t-value | 2-tail sig. |
| Year 1| 60     | 2.4000 | 1.330 | 0.172 | 47     | 1.7021 | .6979 | 0.883 | 0.129 | 102 | 3.25     | 0.002 *    |
| Year 2| 51     | 2.3725 | 1.428 | 0.200 | 43     | 1.8140 | .5586 | 0.906 | 0.138 | 86  | 2.30     | 0.024 *    |
| Year 3| 41     | 2.2439 | 1.300 | 0.203 | 33     | 2.2424 | .0015 | 1.001 | 0.174 | 72  | .01      | 0.996      |

Note: * denotes $p<0.1$

### Table 4.32  Summary of $t$-test in group differences based on importance of media role models over the three years.

|       | Sample | | | | Control | | | | | | | | | |
|-------|--------|---|---|---|--------|---|---|---|---|---|---|---|---|---|---|
|       | N      | Mean | SD  | SE | N      | Mean | Mean D | SD  | SE | df | t-value | 2-tail sig. |
| Year 1| 63     | 1.3810 | 0.7711 | 0.097 | 49     | 1.7959 | .4150 | 1.136 | 0.162 | 110 | -2.19    | 0.031 *    |
| Year 2| 56     | 1.5536 | 0.872 | 0.117 | 43     | 1.5349 | .0187 | 0.909 | 0.139 | 97  | .10      | 0.918      |
| Year 3| 46     | 1.5435 | 0.852 | 0.141 | 35     | 1.5349 | .0006 | 0.852 | 0.144 | 79  | .00      | 0.998      |

Note: * denotes $p<0.1$
Perceived Interest and influence of the mother over time.

The expectations, values and needs transmitted to young women through the traditional family has been identified in the literature as critical to the vocational opportunities that the young women perceive (Callahan, 1991; Kerr, 1991; Olzwewski, et al, 1987. The perception of mother’s interest, influence and actual vocational suggestions are analysed and viewed in Figures 4.9, 4.10, 4.11 and 4.12.

Figure 4.10 Perceived interest of mother over three years of the study %.

As shown in Table 4.16, the perceived interest of the mother was not statistically different between the two groups in the first year. In years two and three this perception did not change. Although the perceived interest of the mother was not statistically different between the groups, the frequency Tables (Figure 4.10) do indicate a diminished interest for the sample group. Although not statistically significant, the frequency tables indicate that the perceived interest and influence of the sample mothers diminished slightly over the three years in the presence of counteracting influences. This could suggest that other influences became more relevant for this group of high-ability girls. Within the control cohort however the perceived interest of the mother remained relatively constant over the three years of the study.
As shown in Table 4.17 the perceived influence of the mother as distinct from perceived interest was not statistically different between the groups. This perception held true for the next two years. The percentages can be examined in Figure 4.11. Within the sample, only 4.8% of the high-ability subjects compared to 10.4% of the control (Figure 4.12) believed that their mothers had “a great deal” of importance in their vocational decision-making. Conversely of the sample cohort 26.8% compared to 18.8% of the control group answered “not at all important”. However around one fifth of the sample and 18.9% of the control group believed that their mothers had “a fair amount” of influence. If the dimensions “fairly important” and “most important” are collapsed and viewed in isolation, the mother’s influence remained constant over the three years of the study for the sample cohort but diminished slightly for the control group.

Actual suggestions of career options by mother over time.

As shown in Table 4.18 the actual vocational suggestions of the mother imply an active intervention reflecting her interest and influence on vocational choice. When an independent t-test was applied this dimension was statistically different in the first year of the study only. It was no longer statistically different in the following two years of Study One.

Figure 4.11 Perceived influence of mother over the three years of the study %.

Figure 4.12 Actual suggestions of mother over the three years of the study %.
The Bar Chart (Figure 4.12) indicated that within the sample cohort, 20.6% answered “a great deal” of vocational advice was given by their mothers. Within the control group a higher proportion (32.7%) believed there was “a great deal” of vocational advice. When the dimensions “a great deal” and “a fair amount” were collapsed and examined in isolation, there appears to be little shift over the three years for the sample cohort. Within the control group however, the mother’s suggestions appear to assume far more importance in the first year of the study and to diminish subsequently.

*Comparison between vocational views of mother and self over time.*

Results from the independent *t*-test shown in t4.19 that the vocational views of the mother and daughter were statistically different between the highly-able and control groups in the first two years of the study only. There was no statistical difference in the final year of Study One however as the comparison in vocational views of mother and daughter from both groups were similar. The Bar Chart was constructed and examined so that the source of the difference could be better identified.
The relative position of difference between the two groups is illustrated by Figure 4:13. Within the sample 28.6% of the group compared to 51% of the control cohort answered “not at all different” when their mothers’ vocational expectations were compared to their own. This remained constant over the next two years of the study. The perception of the girls in the control cohort was that their mothers’ views regarding an appropriate vocational choice for them were not at all different to their own. In the third year both groups believed that their views and those of their mothers were becoming marginally more different to their own. The missing data in the third year of the study within both groups group must be taken into account when examining the relative differences in the views of mother and daughter.

*Perceived interest in career decisions of father over time.*

It has been reported in the literature that although a young child of either gender held vocational attitudes much the same as those held by both parents until adolescence they became more reflective of their father’s attitudes during and after adolescence (Kerr 1991a; Wijting, Arnold and Conrad 1978) This view was not evident in the quantitative study although it was supported in the subsequent qualitative investigations.
As shown in Table 4.20 the perceived interest of the father was not statistically different between the two groups in the first and second year of the study. In the third year the fathers’ perceived vocational interest was significantly different between the groups. The difference between the two groups is indicated in Figure 4.14. Within the sample cohort, 24.4% and 20.4% of the control cohort believed that their fathers had taken “a great deal” of interest in their decision-making. Within the sample group the fathers’ perceived interest increased in the second year of the study but diminished the following year. Within the control group the fathers’ perceived interest increased steadily over the next two years.

Perceived interest in daughter’s vocational decision-making of parents with high status careers.

It is reported that well educated parents have high educational and vocational expectations for their children (Tomlinson-Keasey & Little, 1990) and so it would be reasonable to suppose that such parents would have a high degree of interest in their offspring’s vocational choices and that their expectations for their children. For the purpose of this study, the data was collected through an examination of the demographic information relating to the occupation of the mother and father in the DMC.

Parents with the generally accepted high status occupations of medical practitioners, specialist medical practitioners and lawyers were identified and observed in relation to their perceived degree of interest in the vocational decision-making of their daughters. The categories “a fair amount” of interest and “a great
deal” of interest were collapsed into one grouping. Twenty-nine subjects from a possible sixty-three in the sample group believed that their parents had taken a high degree of interest in their vocational choices. Within the control group twenty-five subjects from a possible forty-nine students perceived their parents’ interest to be important. Parents having high status careers were then extracted from this data.

Within the sample, six fathers were medical specialists or general practitioners. The daughters of five of these men believed their fathers showed a considerable amount of interest in their vocational choices. Of the three lawyer fathers in the group, two of the daughters believed that their fathers were interested in their vocational plans. One mother with the high status career of lawyer was represented as having a high degree of interest in her daughter’s decision-making. The one medical practitioner was also perceived by her daughter as having the same high degree of vocational interest.

Within the control group, four of the fathers were general practitioners or specialist doctors. All four daughters believed that their fathers were very interested in their career choices. High status occupations were represented by three mothers, two medical practitioners and one lawyer. The lawyer’s daughter believed her mother had a large degree of interest in her vocational decisions as did the daughters of the medical practitioners. These observations do suggest that high status parents do take a considerable degree of interest in their daughters’ vocational plans. However the interest does not appear to be exclusive to the high-ability group, but rather high status parents in general. Although the direct question was not asked, the study does differentiate between the two perceptions, interest and influence. Interest does not necessarily translate into influence.

Perceived influence of father in career decision-making over time.
Results from the independent $t$-test are shown in Table 4.21. The perceived influence of the father was not statistically different over the three years of the study. It can be observed in Figure 4.15 that in the first year of the study, 35% of the sample and 25% of the control group said that their fathers had “little influence” on their vocational decision-making. Approximately 20% of the sample reported that their fathers had “a fair amount” of influence however compared to 10% of the control group. This perception changed only slightly over the three years for both groups as fathers were then seen to have “some” or “a fair amount” of influence on the young women.

Actual suggestions of career options by father over time.

Results from the independent $t$-test (Table 4.22) shows that this variable was statistically different between the two groups in the first year of the study. However in years two and three there was no statistical difference between the groups. The frequencies reproduced in Figure 4.16 suggest that within the sample, 15.9% of the subjects nominated “a great deal” when alluding to the vocational suggestions made by their fathers. Of the control group, 18.4% also nominated “a great deal”. However when the category “a fair amount” was observed, 36.7% of the control group, was in this category compared to only 15.9% of the high-ability girls. The results suggest that the girls within the control group perceive that their fathers’ vocational suggestions were of more importance.
Perceived comparison between vocational views of father and self over time.

As shown in Table 4.23 there was no statistical difference in the comparison of the views of father and daughter between the groups. This was the case throughout the three years of the study. An examination of Figure 4.17 suggests that within the sample, 38.1% of the subjects believed that their father’s vocational expectations for them were “not at all different” from their own. Of the control group, 43% said that their father’s vocational expectations for them were “not at all different”. The large instance of missing data from the sample in year three was due, in part, to this question being left unanswered. It is possible that the high-ability young women did not believe that their fathers had a strong vocational outlook for them and so felt unable to make a reliable comment.
When viewed together, the results suggest that mothers and fathers of both groups are interested in their daughters’ vocational choices and make career suggestions. This does not necessarily translate into strong vocational influence however. The sample believed that both mother and father exerted a similar degree of influence on their vocational decisions. The frequencies suggest that for the control group however fathers may have even less influence over their daughters’ vocational decision-making than did their mothers. Twenty-nine percent of the control group believed their mothers had “a fair amount” to “a great deal” of influence and 20% of the group who perceived their fathers as having the same degree of influence. For both groups the perceived degree of vocational influence of the remained constant over the three years of the study.

Perceived interest in career decisions of teachers over time.

The literature pertaining to the vocational influence of teachers is conflicting. An Australian study by Teese (1997), found teachers and counsellors had very little influence on the career choices of Australian high-school children. Conversely, another Australian study examining the influence of teachers on girls studying information technology, found teachers to be very important influencers of career choice (Price 1998).

Figure 4.18 Perceived interest of teachers in sample and control %

As shown in Table 4.24 there was no statistical difference between the groups over the three years of Study One. A review of the Bar Chart in Figure 4.18 would suggest that within the sample cohort, 7.9% compared to 8.2 % of the control group believed that their teachers had “a great deal” of interest in their vocational decision-
making. Consistency between the groups was evident when 41.3% of the sample and 44.9% of the control cohort believed that their teachers had “some interest” in their vocational choices. There was no significant change in this overall stability over the three years of the study. These findings would appear to corroborate those of Teese (1997).

Perceived interest of teachers in government and non-government schools.

The literature has identified a difference in the perceived interest of teachers in different school settings (Olszewski, Kublius & Scott, 1992). Currently in Victoria there are 16025 government schools and 695 non-government or independent schools. Government schools represent a wide socio-economic catchment. All of the independent (non-government) schools in this study were relatively wealthy. Although none of the government schools could be viewed as being disadvantaged, in comparison to the independent schools they could be viewed as being less affluent.

Figure 4.19 Comparison between government and non-government schools %.

![Bar chart showing comparison between government and non-government schools](image)

It could be expected that the findings of Olszeweski and Scott (1992) in which students from more disadvantaged schools perceived that they received less vocational guidance from their teachers would be reflected in this investigation. As shown in Figure 4.19 when the categories “a fair amount” and “a great deal” of interest were collapsed, 25% of the independent school students and 21% of the government educated students believed that their teachers’ took “a fair amount” or “a great deal” of interest in their vocational decision-making. When a t-test was computed there was no statistical difference between the groups (t = -1.17, p = .244). This result, constant over the three years does not support the findings of the 1992 study by Olszeweski and Scott).
Perceived influence of teachers in career decision-making over time

Figure 4.20 Perceived influence of teachers over the three years %.

As indicated in Table 4.25 no statistical difference in perceived teacher influence was found between the groups throughout the three years of Study One. Although teachers in general, and career teachers in particular, were generally nominated by the students as their primary vocational advisors, advice did not transfer into influence. The percentages in Figure 4.20 show that influence of “a great deal” was nominated by only 6.3% of the sample and 4.1% of the control group. In years two and three no student in the control cohort believed that their teachers had had “a great deal” of influence over their vocational decisions. Within the sample 33.9 % believed that their teachers had “very little” influence on their career decision. Likewise, 33.3 % of the control group believed that their teachers had “very little” influence on their career decisions.

Actual suggestions of career options by teachers over time.

Figure 4.21 Actual vocational suggestions by teachers over the three years %.
As shown in Table 4.26 the actual vocational suggestions of teachers were not statistically different between the groups in the first and the third year \((t=0.26, p>0.1)\) of Study One. In the second year there was a statistical difference however. The young women in the control group believed that their teachers’ suggestions were not at all different from their own vocational plans whereas the high-ability girls’ vocational choices did differ from the suggestions of their teachers. The percentages shown in Figure 4.21 indicate that within the sample, 6.3% of the subjects believed that their teachers’ suggestions of a career path was “very important”. Within the control cohort, 14.1% believed that their teachers’ suggestions assumed “a great deal” of importance.

Comparison between vocational views of self and teachers over time.

Figure 4.22 Comparison of views of teachers and subjects over the three years %.

The independent \(t\)-test shown in Table 4.27 indicates that there was no statistical difference between the groups in the first year of the study. In the second year of the study however the views of the teacher and subjects were statistically different. The percentages in Figure 4.22 suggest that in year one 39% percent of the sample cohort and 42% of the control group believed that their teachers views and theirs were “not at all different” from their own. Across time however the sample group reported a widening gap between the expectations of their teachers and their own as the high-ability girls’ views and those of their teachers.
The overall results suggest that neither group believed that their teachers took a great deal of interest in their vocational trajectory. Although the vocational views the teacher held for the student were not particularly different from their own, the girls believed that their teachers did not greatly influence their career choice.

**Perceived interest in career decisions of friends over time.**

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent. The literature identifies the need for acceptance and validation among gifted peers as being powerful as the adolescent looks to his or her peers for approval and a feeling of commonality (Festinger, 1954; Webb, 1993). However when the young person is focusing on vocational decision-making the peer group does not appear to be as influential.

The data pertaining to the perceived interest and influence of friends is presented in both graphic and tabular form.

**Figure 4.23 Perceived interest of friends over the three years %.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Groups in the first year of Study One is indicated. There was no significant difference between the groups in years two and year three however. It has been suggested that an adolescent’s peer group and/or their friends would exert influence over the vocational decision-making of their friends (Buescher, 1991) and it could be anticipated that the girls would perceive that their friends may have considerable interest in, and influence on, career choice. In Figure 4.23 the Bar Chart can be examined. In the first year of Study One, 38% of the young women in the sample cohort believed that their friends had taken “some” interest in their decision-making compared to 38% of the control group who
believed that their friends had taken “very little” interest in their decision-making. Over the three years of Study One this perception changed for both groups as the girls assumed their friends took more interest in their vocational decisions.

*Perceived influence of friends in career decision-making over time.*

**Figure 4.24 Influence of friends over three years %.*

![Perceived Influence of Friends](image)

An examination of Table 4.29 and Figure 4.24 show that there was no statistical difference between the groups over the three years of the study. Both groups believed their friends had very little influence over their vocational decision-making.

*Actual suggestions of career options by friends over time.*

**Figure 4.25 Actual vocational suggestions of friends over the three years %.*

![Actual Suggestions of Career Options](image)

Table 4.30 shows no statistical difference between the groups in the actual vocational suggestions of their friends over the three years. Neither group believed that their friends’ vocational suggestions were particularly important. The percentages
observed in Figure 4.25 suggest that in the first year of the study only 6.3% of the sample and 8.2% of the control believed that their friends’ suggestions were “very important”. This perception remained relatively constant over the three years of Study One. Although it did appear to become more important for the control group in year three, it was not statistically different.

Comparison of views of self and friends over time.

Figure 4.26 Comparison of self and views of friends over the three years %.

Table 4.31, indicates that when an independent t-test was applied the comparison between the subjects’ and their friends’ vocational viewpoint was statistically different in the first and second years of Study One. Although a larger group of control girls than high-ability girls (Figure 4.26) believed that the views of themselves and their friends were “a great deal” different there was no statistical difference between the groups in the third year.

In year one, frequencies indicate that 33% of the sample cohort believed that their friends’ views were “not at all” different” from their own. Of the control group, 55.3% believed that their friends vocational views were “not at all different” from their own. The results were similar in the second year of the study. This would suggest that the peers of highly-able group did not agree with their friends’ vocational choice to the same extent as the peers of the control group. In year three however there was no statistical difference between the groups as friends assumed dissimilar views to the girls in the study. The views of the young women and the views of their friends in both groups diverged.
**Perceived importance of media role models.**

An examination of Table 4.32 when an independent *t*-test was applied this dimension was statistically different between the groups in the first year of the investigation only. Over the next two years of the study there was no longer a significant difference between the groups.

**Figure 4.27 Importance of media role models in year one of the study %.

![Bar Chart](image)

An examination of the Bar Chart (Figure 4.27) in the first year of the study suggests that 76.2% of the sample and 63.3% of the control group believed that the influence of media role models on their career choices was of “very little importance”. When the categories, “a fair amount” and “some” were collapsed, 11.1% (n=7) of the sample compared to 30.6% (n=15) of the control group believed that role-models were influential. No student in either group believed that the influence of media role models was “most important”. The control group appeared to assign more importance to the influence of media role-models than did the sample. Although there was no statistical difference between the groups in the second or third year of the study, these perceptions remained relatively constant over the three years.

The subjects were asked to nominate anyone or anything else that had influenced their vocational decisions. Thirty-one students, fifteen high-ability and sixteen controls specifically nominated their own interests and/or “inspiration”, as
influencing their vocational path. Other influencers were school marks, work experience, other family members and the media.

**Summary of data.**

The relative influence of the variables mother, father, teachers and friends were examined so that research question relating to which of the variables assumed the most importance could be addressed. The frequencies for two categories of influence, “a fair amount” and “a great deal” were collapsed to provide a clear pictorial representation of the data. The data is presented in both graphic and tabular form.

**What variable is perceived by the subjects as having the most influence?**

![Figure 4.28 Relative influence of the variables %](image)

**Table 4.33 Percentages showing relative influence of the variables in year one.**

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
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<th></th>
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<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
</tr>
<tr>
<td>Mother</td>
<td>17</td>
<td>2.556</td>
<td>1.254</td>
<td>0.158</td>
<td>14</td>
<td>2.556</td>
<td>1.254</td>
<td>0.181</td>
</tr>
<tr>
<td>Father</td>
<td>16</td>
<td>2.323</td>
<td>1.315</td>
<td>0.167</td>
<td>10</td>
<td>2.574</td>
<td>1.281</td>
<td>0.187</td>
</tr>
<tr>
<td>Teacher</td>
<td>9</td>
<td>2.210</td>
<td>1.189</td>
<td>0.151</td>
<td>9</td>
<td>2.292</td>
<td>1.202</td>
<td>0.174</td>
</tr>
<tr>
<td>Friends</td>
<td>5</td>
<td>1.984</td>
<td>1.024</td>
<td>0.129</td>
<td>8</td>
<td>2.208</td>
<td>1.220</td>
<td>0.176</td>
</tr>
</tbody>
</table>

It would appear that the four variables, mother, father, teachers and friends, mothers assume a similar degree of importance in the perceptions of both the sample and control groups. The mother is perceived as slightly more important than the father within the sample cohort only. Within the control the reverse is found as the father’s
influence appears to have more importance than the mother. Although the influence of teachers and friends assume considerably less importance than parents for both groups, teachers and friends were perceived as being relatively more influential by the control group. These findings remained relatively constant over the three years of the study.

Of the four variables discussed, mother, father, teachers and friends the analysis would suggest that for both groups teachers and friends have the least amount of influence on vocational decision-making. The comparison between the views of the mother and friends affords the greatest difference between the two groups. In the case of the mother, 28.6% of the sample compared to 51% of the control answered “not at all different” to their own career choices. When the comparative views of the subjects and their friends were examined 35% of the sample cohort believed that their friend’s views were “not different” from their own compared to 55.3% of the control group who believed that their friends’ vocational views were “not different” from their own.

**Summary and discussion of results.**

The quantitative study was conducted over a three year period. The Coopersmith SEI, the VPI and the DMQ were administered to the subjects in the first year of the investigation. In the second and third years the DMQ only was posted to the girls in the study. The results were reported in the order of administration, firstly the Coopersmith, secondly the VPI and thirdly the DMQ. Differences between the groups were identified though $t$-tests. Cross tabulations examined relationships and frequencies were computed to give more insight into the evident differences and similarities.

The demographic comparison between the two groups was on the basis of the place of birth of the parents and their occupations. There were important similarities on the origin and the occupational status of the parents. This would indicate that demographics were not the cause of any differences.
Self-esteem between the groups was compared using a $t$-test of independent samples. There was no significant difference between the groups on the sub-tests, General, and School self-esteem. There was a significant difference between the groups in the sub-tests Home, Social and Total self-esteem.

Studies have found that high self-esteem predicts early career choice and conversely students with low self esteem delay vocational decision-making (Casey & Shore, 1998). In this investigation however it was observed that measured high self-esteem did not predict early vocational decision-making in either the high-ability or the control groups.

Students with low self-esteem within the control group nevertheless were still able to make viable vocational decisions. When the longitudinal aspect of the study of vocational decision-making was viewed over three years a steady increase in the ability to make a career choice was observed within the sample. Conversely there was a degree of uncertainty within the control group as their career choices changed from a definite vocational choice to undecided over the three years. Much of the missing data in the third year of the study came from the control group. This missing data could be attributed to a perception on the part of the girls that because their vocational aspirations had not been realized their occupations were not worthy to be included in the investigation. Indeed they may have simply lost interest in being part of the study.

The VPI identified strong vocational interests in the *Investigative* and *Enterprising* categories for the sample with *Realistic, Artistic, Social* and *Conventional* interests evenly spread among the students in both groups. A larger group of control students held *Social* interests than did the sample. When the highest individual RIASEC score was extracted, the *Investigative* category was constantly the most represented for the sample group *Enterprising* interests were the next. Within the control group *Enterprising* was the most represented with *Artistic, Social* and *Investigative* interests assumed a similar measure of importance.
Early career nomination and final career choice was similar for subjects within both groups choosing professional careers with the professional group remaining stable. There was a slight shift from young women in the sample who nominated para-professional occupations to managerial careers. In comparison a small percentage of young women in the control cohort with early nominations in the professional category ultimately chose careers in sales and service possibly as a result of more realistic aspirations when school results were released.

In only a few instances, daughters nominated the same occupation as those of their parents. The categories did not discriminate sufficiently between disparate professional occupations so that any meaningful information could be extracted. The girls’ vocations were in the same general category as that of their parents however. For the sample, one important exception was in the managerial category. One quarter of the sample fathers were administrators but only a small percentage (4.8%) of their daughters selected managerial positions. As only 2% of the women in the Australian workforce are managers, the lack of female role-models in managerial positions could have impacted on the perceived vocational options of the high-ability group.

High Masculinity/Femininity scores on the VPI predicted non-traditional vocational choice for the sample group. Approximately half of the sample girls had high scores on the M/F scale of the VPI. More than half of this group selected non-traditional vocations. Within the control group however students who had high M/F scores still chose traditional career paths. High-ability young women are encouraged by schools and their parents to take on occupations commensurate with their ability. Many such vocations for example medicine and law are still male dominated and, as such, non-traditional.

Data obtained from the DMQ was examined and t-tests were used to make comparisons between the groups. Nine of the twenty questions on the DMQ were statistically different; two of these related to vocational aspirations. These two questions were linked with the intention of completing further study after school and vocational stimulation and challenge. The third question relating to vocational aspiration required the young women to project themselves into the future and
indicate their perceived promotion within their vocations. There was no significant
difference between the groups until the third year of Study One as it appeared that
neither group was prepared to predict so far ahead. In the third and final year of Study
One however most of the subjects had left school and were either studying, in the
workforce or unemployed. It would appear to be feasible for them to see potential
advances in their chosen vocations.

High self-esteem was not associated with high vocational aspirations for the
sample cohort. Approximately half the sample cohort, (n=31), had high vocational
aspiration but only nineteen students had high self-esteem scores. The control group
had higher self-esteem scores but lowered vocational aspiration.

The question relating to career advisors found that the primary advisors for
both groups were career teachers. Parents were the next most important advisors for
both groups. The high-ability girls believed that people in the professions were the
next group to contact. The control cohort nominated friends and relatives. In the
second year of the study people in the workforce became more important to the
control cohort.

The DMQ was constructed to identify and track those variables influencing
vocational decision-making across time. That is, mother, father, teachers and friends.
It identified a progression from perceived interest, influence to actual suggestions. In
the first year of the study, eight out of the twenty questions on the DMQ indicated a
significant difference between the two groups. These differences were associated with
vocational aspiration, friends’ interest, mothers’, fathers’ and teachers’ vocational
suggestions, the degree of difference between the views of the mother and daughter
and the influence of media role models. In the second year six items were
significantly different between the two groups. These were associated with vocational
aspirations, teachers’ suggestions, mothers’, teachers and friends views. In the third
year there were only two areas of statistical difference. These related to the fathers’
interest in career choice and expectations of advancement in the chosen vocation.
In the first two years of the study, the mother’s perceived interest was equally important to both groups. Both sample and control groups believed that their mothers had “a fair amount” of influence over the three years. A similar percentage of girls in both groups believed that their mother’s influence was ‘fairly important’, but a greater percentage of the sample believed that their mother’s influence was “not at all important”. The Mothers’ views, compared to their own were significantly different. The views of the mother were seen by the control group to be considerably more important than for the sample. Mothers’ actual vocational suggestions were also significantly different between the groups. In the second and third years of the study there was no statistical difference between the groups.

Father’s interest and influence was viewed as being marginally more important for the control group than for the sample. His vocational suggestions were also more important for the control cohort and were statistically different in the first year of the study only. The interest and vocational suggestions of the father did not appear to translate into vocational influence however.

Parents with high status careers took a high degree of interest in their daughter’s vocational trajectory. This was not exclusive to the high-ability girls as control parents also took considerable interest in their daughter’ vocational decision-making.

In the first year of the study teachers’ interest and influence were not statistically different between the groups. In the first and second year the teachers’ vocational suggestions were statistically different between the groups. The teachers’ views compared to those of the girls were also statistically different between the groups in the third year of Study One. Although teachers were the primary advisors for the girls in both groups, it could be argued that the teachers were more interested in the high-ability young women and made appropriate vocational suggestions. This advice was not seen to have translated into vocational interest however.

In the first year of the study there was a significant difference between the groups in the interest and views of friends and young women. This was also apparent
in year two of the investigation. The high-ability girls and their friends had high aspirations and would possibly perceive a wider range of vocational options. Friends assumed more importance for the control cohort than the sample. Their friends’ views were not very different from their own.

Role models in the media assumed more importance for the girls in the control group in the first year of the study. This was statistically different between the groups as the young women in the control groups attributed more importance to media role models than did the high-ability girls. There was no statistical difference between the groups in years two and three of the study however media role models were seen by both groups as having little influence.

When the importance of the variables, mother, father, teachers and friends was observed, fathers exerted slightly more importance for the control girls. The influence of teachers or friends for both the high-ability girls and the control was limited.

The subjects were asked to nominate anyone or anything else that influenced their vocational decisions. Young women in both groups nominated themselves and/or their own interests. Sometimes this was expressed as “inspiration” or “a liking for” a particular vocation or pursuit. Other family members, work experience and the media were also listed as having an impact on vocational choices for some of the girls in both groups.
Chapter Five

Results of Study Two

The aim of Study Two is to test the stability of the vocational decisions made by the high-ability group in Study One. A more accurate view of factors impacting on vocational choice may be determined if the inquiry addresses those influences occurring over time (Grant et al, 2000). This study explores the career-related decisions of highly-able females who are still involved in the educational process. Career-related decisions are the result of an ongoing learning process that includes interactions associated with self-esteem and interest as well as the traditional engagement with family, friends and school in the community in which the young women live.

Study Two is an extension of Study One. Research questions relating to the impact that a time lapse has on the vocational trajectory of young women were addressed so that the longitudinal aspect of the quantitative study could be examined further.

- Is there a change in the stability of vocational direction over the six years?
- Which variable is perceived by the subjects as having the most influence?

There are some forms of investigation that cannot be undertaken by quantitative studies that isolate predetermined variables. The case study method can describe intensively particular features by providing a holistic view of the subject. The researcher is then able to develop and validate theories by utilizing the rich anecdotal data which is possible in micro-analysis. Qualitative case studies foster a new and often deeper appreciation of relationships. Case study inquiry is also suited to the development and elaboration of theory (Foster, 1986). There have been important qualitative studies in the area of the gifted: for example Hollingworth’s (1942) case study involving twelve highly gifted children. Grant, Battle and Heggoy’s

For the purpose of Study Two, qualitative data, in the form of ten case studies, selected from Study One, was used to gather a wealth of descriptive information about the vocational trajectories of the subjects (appendix C). The focus of multiple case studies is broad and encompasses as many variables as possible as they interact with the subjects, ten highly-able young women three years post-Study One. During Study One, the girls were enrolled in secondary schools in the state of Victoria. The subjects were completing their last years of schooling. The ten multiple case studies discussed here focus on a group of young people as they confront specific influences in the progression of their vocational lives. Case study investigations such as this one are able to utilize the rich language of description “to elicit images and analyse situations” (Wilson 1979, p.448). As such, case studies investigate, develop and elaborate on findings. Such qualitative study, in the form of multiple case studies, is particularly suited to Studies Two and Three, both of which elaborate on the original quantitative study. The purpose of Study Two was to determine current tertiary majors, degree completion status and retrospective views of schooling and vocational influences. The data were coded to identify constant themes and important patterns and trends across a time frame. The semi-structured interviews with the subjects have been transcribed and synthesized and are contained in Appendix C.

Three years post Study One the author contacted twelve participants from Study One whose school records were still available to the author and invited them to be part of a follow up investigation. The students in Study Two, highly-able young women in the sample cohort had responded to the original questionnaire (DMQ) consistently over the three years of Study One. They lived in the same regional Victorian town during their schooling. Of those students who responded positively to the researcher’s request, ten had experienced both single-sex and co-educational settings. They could be contacted regularly, and they had a variety of vocational experiences. The subjects had all graduated from school either two, three or four years previously.
The author interviewed the subjects in person, by telephone or in the case of two of the young women who had moved to another state, by E-mail. The data was analysed in two ways. Firstly the quantitative data drawn from Study One in the form of the Holland VPI, the Coopersmith SEI and the DMQ have been combined with the qualitative data in Study Two extracted from the semi-structured interviews, to give an in depth overview of the subjects. This data has been discussed in relation to the variables pertaining to vocational choice identified in the literature. Secondly, the data has been analysed using triangulation, a method that involves checking information that has been collected from different sources for consistency. The researcher designed a colour coded chart so that the data from study Two could be compared to that of the study One.

The following Table is a diagrammatic representation of the data of the narrative found in each case study. An x represents the presence of the variable. As such it identifies major points at which the data was consistent. “Yes” or “No” was used to indicate whether or not vocational choice was the same as the original nomination in Study One.

Table 4.1 Post-school reflections of vocational influence.

<table>
<thead>
<tr>
<th>Influence</th>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>n</td>
<td>y</td>
<td>no</td>
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</tr>
</tbody>
</table>
The following observations are a summary of the information taken from the case-study profiles found in Appendix C.

The influence of the variables, mother, father, teacher and friends.

Mother

The interest, influence and vocational suggestions of the mother are variables in this investigation. Study One results suggest that mothers have marginally more influence over their daughters’ vocational aspirations than do their fathers. In Study Two, mothers, either by positive encouragement of their daughters, or direct modeling influenced the career choices of four of the ten participants. Of these four, one subject mentioned specifically that her mother directly influenced her change in career direction by enabling her to experience a particular career option at her mother’s place of work. These four subjects specifically alluded to the importance of their mother’s emotional support. One student believed that her mother’s support and encouragement, demonstrated by taking her to University open days, influenced considerably her vocational path. Another believed that her mother’s suggested career options, encouraging her daughter to make “a wise choice” was instrumental in her career choice. “Mum and Dad said that there was a demand for teachers and it was a ‘wise option’. Teaching is not a long term choice for me though as I want to end up in management consultancy” (Case Study No. 2). The fourth highly-able young woman had lost confidence in her academic ability. In retrospect, she attributes this to the Chronic Fatigue Syndrome she suffered in Grade Ten at high school. When she left school she joined a bank and attempted data processing. Some time later she applied successful to university to study natural science. Her mother works in an IVF clinic. A visit with her mother to the clinic resulted in the young woman changing her
vocational direction from natural sciences to reproductive science, a decision with which she is very happy. “My mother works in an IVF clinic. She took me to work where I met many interesting people” (Case Study No.1). No girl believed that her mother’s influence had been negative in any way.

**Father**

In Kerr’s study of eminent women it is reported that gifted young women are likely to be influenced by their fathers more so than by their mothers (Kerr, 1991). The results of study One would suggest that the influence of both parents was similar with a slight tendency towards the mother being more important. Twenty-seven percent of the highly-able young females at this time believed that their mothers had the greater influence in the vocational choices and twenty-five percent believed that their fathers were more important.

In Study Two however, when the high-ability young women were able to reflect on their vocational trajectory, six of the ten subjects believed their fathers had influenced them considerably. “In hindsight I was just trying to please my father. My father is a doctor” (Case Study No. 5). It is important to note that this influence was viewed by the young women as both negative and positive. One participant believed that her father through his direct modelling behaviour and encouragement was of the utmost importance in the progression of her vocational trajectory. The fact that he took her on hospital rounds with him from an early age influenced her decision to study medicine. “Dad definitely, mainly by exposure, doing hospital rounds with him. He strongly encouraged me in that area”(Case Study No. 4).

Father’s influence was not entirely positive however. At least four of the ten subjects now appreciated that they were endeavoring to please their fathers. These girls sought to gain his respect and approval. One of the subjects referred to negative experiences. This negativity was expressed through overt disapproval and constant harassment on the part of her father. She reported that her father’s continual nagging “you are going to be a doctor aren’t you” (Case Study No.10) completely turned her away from her initial career choice of medicine. She subsequently became a speech
pathologist. “At the time he had a huge influence on me and I felt very pressured. He does not remember doing this but I can” (Case Study No. 10). Another young woman reported that “I only changed to law to please my father” (Case Study No.9).

**Teacher.**

The results of Study One would suggest that of the variables of mother, father, teachers and friends, teachers generally, and career teachers in particular, had considerable interest in the subjects’ vocational choices. This interest did not translate into significant influence on the vocational decision-making of the young women. The results from Study Two of high-ability young women appear to substantiate this. Seven out of the ten subjects believed that their teachers played no significant role in their career choice. As with father, teachers’ behaviour, positive and affirming or conversely, negative and destructive were cited as particularly influential dimensions in the vocational decision-making process of three of the young women. One subject believed that her teacher’s positive comments, “because you’re good at writing “ (Case Study No.2) encouraged her to apply for a tertiary place in journalism.

On the other hand, another subject said that her teacher actively discouraged her from a particular career path. This subject gained extremely high T-scores on both the Investigative and Masculine/feminine scales of the VPI and had wanted to study medicine from a young age. This young woman believed her vocational decision was influenced negatively. “ I will just say that the most doubt I had about making a the right decision, would have been when a teacher to whom I was quite close said that she couldn’t see me being a doctor” (Case Study No.8). This lack of encouragement from an admired teacher caused a degree of self-doubt. She did not pursue her “passion’ of becoming a doctor. Instead she took up the less intellectually rigorous study of anatomical science although still within the area of her interest.

**Friends.**

The theory of social comparisons suggests that individuals respond to a powerful drive to compare and evaluate the opinions of peers rather than those of someone different from themselves. There is evidence that gifted young people are
more heavily influenced by a need for peer acceptance than their non-gifted classmates. In both Studies One and Two this conjecture was not substantiated. Only one subject from the ten participants in Study Two cited friends or peers as being of some significance in the course of her career decision-making. Even this influence was indirect. She reported admiration for the high achieving professional families of her friends encouraged and motivated her. ‘My friends all have high achieving professional families and I want to attain to the highest academic levels that I can without taking away from my social life” (Case Study No. 6). A chance meeting with a chronological age peer in a hotel one night influenced another of the subjects to change her vocational trajectory from medicine to speech pathology. “A conversation with a girl in a pub one night introduced me to the idea of Speech Pathology. I investigated it thoroughly. It appeared to be the course for me” (Case Study No. 10).

School.

According to the Bronfenbrenner model, industrialized society is conceptualized into three external systems in which human development takes place. These are the Microsystem, the Exosystem and the Mesosystem (Brofenbrenner, 1986) These domains develop and nurture social values and life expectations. The Microsystem especially recognizes that although the family is the principal context in which the psychological development of children takes place, other settings and environments influence the developmental process. The school environment is one in which children spend a considerable amount of time. As such, its influence on the socialization and development of the adolescent is immense. In May 1987, the Commonwealth of Australia Schools’ Commission issued ‘The National Policy for the Education of Girls in Australian Schools’. This report recommended changes to allow girls and boys similar opportunities to succeed in school. In recent years this policy focused attention on increasing the rates of female participation in a wider range of subjects. Girls have been encouraged to broaden their horizons and take up subjects that would enable them to study traditionally male oriented vocations. Seven of the girls believed that affirmative action policies within their schools played a significant role in their vocational choices. The young women in this investigation who had affirmative policies in their schools, believed that the single-sex school gave
greater support and encouragement through a “girls can do anything” attitude. “We were always encouraged to be our best” (Case Study No.9). “I never though that there were any limitations to my career aspirations” (Case Study No. 1). “My (single-sex) school was very important to me in establishing confidence and although I may still have doubts about my intellectual capabilities, I feel it gave me a lot of confidence to do what I thought was best” (Case Study No. 8).

It is possible however that this very attitude contributes to a feeling of career ambiguity in the highly-able young woman. Consistent with the findings of Kerr (1991) the young woman is given the message that she has multiple vocational options. High-ability young women with talents in more than one domain may be faced with career indecision and change their career paths several times. Many of the girls professed that the school was an advocate in their desire to attempt vocations that were not seen as being traditionally female. It follows that many young women are given the message that “you can be both masculine and feminine” (Hollinger, 1991,p135). Conflicting stereotypes and multiple options can produce a high level of anxiety in the highly-able young women. Indeed many of the subjects in Study Two were vexed with career indecision.

All of the respondents to the semi-structured interview in Study Two had attended both single-sex and co-educational schools. It is of interest to note that all the subjects did not believe that at the time of their schooling, that their co-educational schools had the same commitment and values towards female students. The majority of co-educational independent schools in Victoria are boys’ schools which have accepted the enrolment of girls over the last twenty years. The ethos of many of these schools still is essentially that of a boys’ school. “I had considerable encouragement at the girls school. I became less ambitious at the girls school- the girls were less ambitious” (Case Study No. 9). “My final years of schooling were at a co-educational school where girls were expected to act in a very different way” (Case Study No. 7).

**Self-doubt.**
The literature has reported that self-doubt and adjustability are major reasons gifted young women modify and change their career dreams throughout life (Kerr, 1991; Noble, 1989). Self-doubt negatively affected the vocational trajectories of five of the participants. This lack of confidence was the result of illness on the part of three of the subjects. The stress related conditions of Chronic Fatigue Syndrome, Rheumatic Fever and Glandular Fever respectively caused school absences and lower results this resulting in loss of faith in their academic progress. Two of the participants believed that their expected or actual results in the VCE influenced their ultimate career choice. Both respondents doubted their ability to attain high rankings that would enable them to be accepted into the tertiary course of their choice. “I did not think I would get good enough marks. I had chronic fatigue syndrome in Grade 10” (Case Study No. 10). “I had bad study habits and I coasted at school. I didn’t know how to study.” (Case Study No. 3). Of these two, one student did take a less intellectually rigorous option at university. She gained high marks in her first year and transferred to her first option the following year. “My results in science were so good at the end of first year (university) I was able to transfer to medicine” (Case Study No. 9). The other girl worked in industry for a year then was accepted by the university to study in her chosen discipline the following year.

**Interest and the stability of vocational choice.**

Interests can be viewed as something we want. A person’s choices and decisions throughout school are determinants of ultimate vocational choice (Naylor 1993). In vocational psychology, interest is taken to mean a ‘preference for’, ‘liking of’ or ‘enjoyment of’ specific roles and/or activities associated with the context of work. Interests and competencies create a particular personal disposition that leads one to think, perceive and act in special ways. For example, people who resemble the social type, seek out social occupations such as teachers, social workers and ministers (Holland, 1985).

In the qualitative study the young women who choose non-traditional careers showed strong congruence with their Holland type (Wolfe & Betz, 1981). These seem to predict more accurately the preferences of women who have resisted the influence
of socializing agents which encourage traditional female vocational goals. (Wolfe & Betz, 1981). Women identified by the Holland code as being more masculine personalities were less strongly influenced by occupational stereotyping and more likely to choose non-traditional vocations (Wolfe & Betz, 1981). In the quantitative study (Study One), five of the ten girls had high T-scores in the $M/F$ scale and two had medium scores. Non-traditional vocations were chosen by six of the ten girls. Over time the vocational trajectory changed for nine of the ten girls. Three years later, eight of the ten young women were working or studying in non-traditional occupations. These figures would suggest that although some of the group did not have high $M/F$ scores they too eventually choose non-traditional vocations.

All of the respondents in Study Two believed that interest played a decisive role in the decision-making process. Two of the students believed that interest was the most important factor regulating vocational choice. Of the ten subjects in study two, seven have vocations, or are studying within the area indicated by their highest VPI/interest profile. It is relevant to note that although the current vocational choice of two of the subjects did not match their VPI profile, the initial vocational choice of one did. This student did not gain a place at university in the area of her interest. She elected to study in the area of social science. She does believe however that she will embrace her first career choice of journalism ultimately. The other subject started studying within her interest area but put “romantic notions of being a writer into perspective” and took up policy research because she believed it was more practical. The VPI profile of one further subject did not match her final career choice of medicine as indicated in Study One. After a chance meeting with a girl in a hotel who told her about her own occupation, she changed her vocation to the related area of speech pathology. She indicated that she intended to own her business by establishing a home clinic. This aspiration is commensurate with her high Enterprising score as measured by the VPI.

**Gifted programs.**

The literature proposes that intellectually able females in special programs for the gifted may have high self-esteem which, in turn, may influence vocational choice.
The literature has identified high self-esteem as being indicative of early vocational choice and the formation of a strong vocational identity. Eight of the ten young women had been involved in enrichment programs for highly-able students during their schooling. These programs comprised organized university run studies in particular areas of interest and/or activities that would be classified as “provisions” rather than dedicated programs for the gifted. The self-esteem was measured in Study One by the administration of the Coopersmith SEI. A review of the case studies identifies seven of the eight students as having relatively high self-esteem. The one student with particularly low self-esteem in retrospect attributes her poor self-esteem, to illness during Grade 8. Only one of the students however specifically mentioned that their involvement in an enrichment program directly influenced her vocational choice by fostering a deep interest in an area in which she previously had no knowledge. As a result of this, she studied commerce.

**Media and role models**

The influence of the media in our lives in general is immense. The results from the qualitative study suggest that its influence on vocational decision-making is not recognized consciously by the girls. Only two of the ten participants were directly influenced by the media. One developed a vocational interest through watching a television soap opera/drama about the life of a country doctor in Victoria. “I’d always wanted to do medicine from the time I used to watch ‘A County Practice on Television’” (Case Study No. 9). It is of interest to note that in the original Study One the same girl believed that media role models were “of no importance at all”. The other participant was influenced by reading about the lives of successful business women and women in politics. “I like to read about successful Australian women who have started businesses and women in politics” (Case Study No. 6).

**Stability of the vocational trajectory.**

It is identified in the literature that academically talented students tend to change majors (courses) more often than average students and tend to show less stability in their interest patterns (Kaufmann, 1981; Kerr, 1996; Kerr & Erb, 1991).
This phenomenon was substantiated in the results of Study Two. Only one of the ten participants in Study Two is studying or working within her original vocational choice. Another is following a closely related career path. The remaining eight subjects have changed career options for a variety of reasons. These include being unsuccessful in being accepted at university to relinquishing “romantic notions”, failing their course or simply changing their minds after realizing that they were not suited to their chosen option. Only four of the ten students who appreciated that they had chosen the wrong career path could all be identified as multi-potential.

Who or what assumed the most influence in the vocational trajectory.

No girl nominated one component in isolation. Although interest was found to be the common motivation among all of the young women, interest could be viewed in several ways. Four of the young women in this qualitative investigation nominated both parents as having the most influence on their vocational choice. This was seen as both positive and negative. Although some girls appreciated that it was their parents who had fostered their interest in a particular vocational trajectory by encouragement and modeling, others reported that they had modified their interests in order to please their fathers. Three young women specifically identified their own interests as having the most influence on their vocational choices. One girl reported that the greatest influence on her vocational choice was a chance meeting with another girl in a hotel one night. This kindled her interest in taking up a career in speech pathology. Another young woman believed that a female doctor on a television drama had the greatest influence on her occupational choice of medicine. Reading about successful business women had the most influence on vocational choice for one young woman. Only one subject specifically nominated friends as being important. The important careers of her friends’ parents influenced her vocational aspirations considerably.

In examining the data at a qualitative level, an important aspect of this study has been the change in the vocational trajectory of nine out of the ten high-ability young women. Only one of the ten subjects has steadfastly pursued a linear vocational trajectory from an early age. This phenomenon where individuals who
have extremely focused career interest from an early age as “early emergence” (Kerr 1991a p89).
In the quantitative study this young woman had high aspirations and the support and
guidance of both her parents. She believed that although her teachers showed interest
in her career choice they did not influence her in any way. She recognized that it was
her father’s modeling as well as work experience in a hospital which fostered her
interest in the vocation and encouraged her focus. She had no self-doubt and was
always confident that she would obtain the high marks necessary to win a place at the
university to pursue her chosen vocation. The VPI accurately predicted the vocational
interest of this highly-able girl.

The remaining nine students have changed their vocational direction from the
career nominated in the quantitative study. The VPI accurately reflected the original
career decisions of the ten girls in Study Two. Seven of the ten young women are still
undertaking career paths that reflect that original VPI vocational interest category.
The current vocational choices or areas of study for the remaining three girls no
longer exhibit a VPI match however. The occurrence of nine changes or
modifications in vocational direction can be observed within the triangulated data and
can be attributed to various environmental experiences.

Self-doubt has been identified in the literature as being a major cause of career
modification and change. Five of the subjects who changed vocational direction
believed that self-doubt was an important factor. Three of the five self-doubters had
serious stress related illnesses in the last years of formal schooling. Another young
woman doubted her ability to achieve high enough marks in the VCE. The fifth girl
doubted her intelligence. Even though she was a scholarship winner and had wanted
to be a doctor most of her life, she attributed her change in vocational focus to a
teacher who told her “you’re not suited to be a doctor” She believed this comment
undermined her self confidence. “Destroying the early emerger’s passion may not be
easy, but it is done by belittling talent or interest” (Kerr 1991a p89).

On the basis of responses extracted from all five girls indicated that their
father’s influence was of importance. This was reflected in the qualitative study also.
Although three of the five girls identified retrospectively that they were trying to please their fathers, only one believed that it was her father’s constant pressure and nagging that caused her to choose a career in order to please him and not herself. She subsequently changed her focus when she left home to study at university.

Whether self-doubt was a direct result of illness, or the reverse, is arguable. The self-doubt experienced by these young women could be attributed to perceived pressure from their fathers, or it may have been a function of self-imposed pressure of school performance they struggled with career indecision and the resultant anxiety.

Vocation aspiration was examined in the quantitative study. It was of interest to observe that of the five self-doubters only one had low vocational aspirations. This could well be an effect of the perceived school support and involvement in gifted programs of all nine girls. Only one girl believed her teacher’s negativity actually contributed towards her self-doubt.

Four of the nine students who changed vocational direction identified chance factors as being of some importance in the course of their decision-making. Only two of these girls attributed their change in vocational direction directly to chance factors. However, one girl after two years of career indecision left the state to be with her boyfriend. When she was forced to seek a job in a large stationery company she found her ultimate career path laid out for her. She was selected to train as a manager within this organization. The other young woman had a chance meeting with a stranger in a hotel. After talking with the other young woman she too changed vocational direction.

Two girls believed that role models in the media had played an important role in their vocational choices although in the quantitative study, neither girl indicated a belief that media influences were important. One girl believed that reading about business women in management positions influenced her career change. The other girls had wanted to study medicine from the time she was a child watching a television drama about a country doctor. She believes this and female doctors in a
local hospital influenced her to forsake the law career she undertook just to please her father and re focus upon her own dreams of becoming a doctor.

Eight of the ten girls in the qualitative investigation were involved in gifted programs, albeit these programs could be considered enrichment provisions rather than programs. It is expected that high-ability individuals in gifted programs are less likely to have self-esteem and adjustment problems. This was not found to be the case for girls in Study Two who experienced vocational indecision and self-doubt. The five girls who experienced self-doubt and vocational indecision were all participants in gifted programs at their schools. Of the nine girls who experienced vocational change seven were involved in gifted programs. It is of interest to observe what seems to be a contradiction. That is, although all the young women believed their schools had equal opportunity policies which encouraged and supported them, they all experienced vocational indecision. It would seem that perceived support did not assist with adequate vocational choice.

Self-doubt, father’s influence and/or trying to please him, chance factors, illness, as well as the media role models have been identified as factors influencing change in vocational direction for the high-ability young women in this investigation.

**Summary of results.**

Study Two is an explication of Study One. Qualitative data, in the form of ten case studies, devised from a semi-structured interview protocol, posed temporal questions and gathered anecdotal information.

A review of the patterns emerging from this data would suggest that parents are instrumental in the career decision-making process of highly-able young people. In Study Two, mothers, either by positive encouragement of their daughters, or direct modeling influenced the career choices of four of the ten participants. These four subjects specifically alluded to the importance of their mother’s reassurance of, and belief in them. The girls’ fathers’ support seems to be an even more important dimension. When the high-ability young women were able to reflect on their
vocational trajectory, six of the ten subjects believed their fathers had influenced them considerably. The father’s influence was not entirely positive however, at least five of the subjects reported that they were endeavoring to please their fathers. These girls sought gain his respect and approval by considering career options that would please him.

Affirmative action policies which facilitate a positive school atmosphere where female educational and vocational aspirations are fostered, appears to be an important factor also. Eight of the ten girls reported that the affirmative action atmosphere and policies in their respective schools influenced their vocational choices by encouraging them to embrace a “girls can do anything attitude. The girls believed that they were supported in their plans to undertake non-traditional occupations. The stability of interest as measured by the VPI which translated into occupations within the young woman’s interest area was significant. Of the ten subjects in the qualitative study, seven have vocations, or are studying within the area, indicated by their highest VPI /interest profile. Although nine of the ten high-ability girls in the qualitative study have changed career direction from their original vocational choice, only two have occupations which no longer reflect their original VPI profile. Of the nine girls who changed career choice, only one had poor vocational aspiration. As all nine girls were involved in gifted programs at school that they believed supported them through equal opportunity policies, this would appear to be a reasonable outcome.

The progressive change in career options of nine of the ten subjects is significant. It suggests strongly that other influences must have assumed importance since the days of formal schooling. These include being unsuccessful in being accepted at university to relinquishing “romantic notions” and becoming more pragmatic, failing their course or simply changing their minds after realizing that they were not suited to their chosen option. The four students who appreciated that they had chosen the wrong career path could all be identified as multi-potential. None of these young women attributed their change in vocational direction to their multi-potentiality however. When the data was triangulated several factors were consistent for the high-ability young women in this investigation. These include self-doubt,
father’s influence and/or trying to please him, chance factors, illness, as well as the influence of role models in the media, were those variables identified as influencing change in vocational direction.

Self-doubt was identified by five of the students as having an impact on the change of direction in their vocational trajectory. In the quantitative study four of the girls reported that their fathers had considerable interest and influence on their vocational decisions. In Study two all four reported that their fathers had been an important influence in their career decision-making. In retrospect, all of the self-doubters reported that they were trying to please their fathers. Research within the medical field has made a strong association between stress and physical illness. Three of the four self-doubters had stress related illnesses in the last years of school. It would appear that illness may well be a result of the stress associated with living up to fathers’ expectations, that is, trying to please father. From data extracted in the quantitative study, the four girls burdened with self-doubt nominated their teachers as being their primary career advisors. In the qualitative study only one girl believed her teacher influenced their vocational trajectory. This influence was negative and actually contributed towards her self-doubt.

Of the nine girls who changed vocational direction, chance factors impacted on the vocational decision-making of six of them. It would be reasonable to incorporate illness as a chance factor. Three of these young women believed that their illness seriously impacted on their vocational trajectory. One girl believed that inclusion in a university enrichment program fostered her vocational interest. Another young women changed her vocational direction when she moved to another state to be with her boyfriend. The sixth young women believed a chance meeting with a peer influenced her to try an alternative occupation.

When the girls were asked to retrospectively nominate the factor that they believed had the most influence over their vocational trajectory, they seemed unable or unwilling to choose just one dimension. It would be reasonable to believe that because all the girls mentioned the concept of interest in vocational choice is was seen by them as being very important. For the girls in both the qualitative and
quantitative studies, interest was shaped by the environment. It was fostered by parents, friends, the school environment, role models in the media, as well as people at work in the wider community.
Chapter Six

Results of Study Three

So that Studies One and Two could be confirmed and new material reviewed in the light of current research and societal attitudes, a further study was planned. As such, Study Three is an explication of Studies One and Two. Data collection for Study Three took place in 2000, the same year as the data collection for Study Two. Young women enrolled in an accelerated program for high-ability students at a single-sex government school comprised the population in this qualitative study.

The following research questions were addressed.

- What is the relationship between parental occupations and daughters’ vocational choice?
- Does self-esteem influence vocational aspirations and early vocational decision-making?
- Does vocational interest measured on the VPI reflect final career choice?
- Which variable is perceived by the subjects as having the most influence?

Data collection and analysis.

During August in the year 2000, fourteen students from a single-sex government secondary college in a large regional city in Victoria, Australia, were the subjects of this multiple-case study. The students were selected by the co-ordinator of the accelerated learning program (ALP) at the school. With the advent of the “Bright Futures” policy in Victorian schools, a small number of secondary schools elected to trial an accelerated program for highly able Grade seven students. The participants in study two were enrolled in the accelerated learning program (ALP) at one of the trial schools. Students for the ALP are selected on the basis of their results on tests of general ability at the end of primary (elementary) school. The participants in Study Three had completed the first four years of secondary school (Grades 7-10) in three years. At the end of year nine the students progressed into Grades eleven and twelve.
which comprise the Victorian Certificate of Education (VCE). The participants in this study were in year 12, the final year of secondary schooling.

The selection of students for the study was made by the co-ordinator of the Accelerated Learning Program. All twenty ALP students in Grade 12 were invited to be part of the study. Of the twenty girls, fourteen obtained the parental permission required by the ethics department of the University of Melbourne. The data was collected in August 2000 when the researcher visited the school involved in the study. The Coopersmith Self-Esteem Inventory (S.E.I.), the Vocational Preference Inventory (V.P.I.) and a revised version of the Decision-making Questionnaire (D.M.Q), were administered. The option outlined in Chapter Three, that is the administration of a modified DMQ reflective of the findings in Studies One and Two was important. It included more questions relating to female role-models. In Study One the issue of female role-models was addressed but only in relation to the media. In the years immediately preceding Study Three Victorian schools have actively pursued a policy of equal opportunity and affirmative action. It was considered to be appropriate to include more questions relating to female role-models in a wider frame of reference in Study Three.

All the data were collected during one regular 40 minute class period. So that anecdotal evidence could be considered, the girls were encouraged to write comments in the margin of the Decision-making Questionnaire. The data was collated into case-studies and appears in appendix C.

Results

The data was scored by the researcher and entered onto SPSS 6.0 where frequency tables were used to examine the structure of the instruments used. The Decision-making Questionnaire (DMQ) established factual information about the parents of the participants in the study. Questions relating to birthplace and occupations of the parents were asked to establish the homogeneity of the population. Although questions directly associated with socio-economic status were not asked,
the location of the government school, within a large regional city in Victoria, would place the families in lower to upper middle class strata of Australian society.

The homogeneity of the subjects in Study Three was similar to that of Study One. The majority of parents were Australian born. Other parents were born in Europe, Canada, USA and Asia. Likewise the majority of parents had professional or para-professional careers. Administrators, clerks, sales and service personnel were also represented. Three parents were not employed outside the home.

**Self-Esteem and vocational decision-making.**

Simple frequency tables were employed to examine the structure of the results identified in the Coopersmith Self-Esteem Inventory so that a measurement of self-esteem could be observed. In the literature, two dimensions of self-esteem have been reported. The self-esteem which emphasises feelings of contentment as self-satisfaction (feeling good), and that which occurs as a result of success (doing well). In this investigation the Coopersmith SEI measured self-esteem. According to Seligman, (1995 p 31) this test emphasises the “feeling good” aspect of self-esteem:

When the total self-esteem score was examined, seven of the highly-able cohort had very high self-esteem, six young women had medium self-esteem and one girl had low self esteem. This result was found to be consistent over the four sub-tests, school, home, social and general.

The subscale General self-esteem relates to self-attitudes in general. Six girls had very high self-esteem and one had poor self-esteem. Home self-esteem measures self-attitudes relating to the atmosphere of home and family. That is the self-esteem generated by the immediate family as distinct to that of the individual’s societal perception of self. Six girls in the high-ability cohort had very high self-esteem. Only one student had poor home self-esteem. Social self-esteem relates to the individual’s perception of self as a construct of societal values and expectations. Eight girls had very high social self-esteem, five had medium social self-esteem and one girl had poor social self-esteem.
According to the Coopersmith SEI manual, academic perceptions of self is a construct of the school environment. The school sub-scale in the Coopersmith SEI addresses issues relating to self-attitudes in the environment of school and learning. The literature proposes that gifted students sometimes have better academic ‘selves’ than ‘social selves’ It could be expected that girls in a single-sex school with a dedicated program for the gifted would have positive school self-esteem. Six of the fourteen girls in this cohort had very high self-esteem. Indeed no girl in the cohort had poor school self-esteem. It is of interest to note that the only young woman who had poor self esteem in every other sub-scale did not have poor school self-esteem.

The subjects whose total self-esteem score was in the fourth quartile (= . 75) were deemed to have high self-esteem (Coopersmith 1987). Seven students from a possible fourteen had high self-esteem scores. Within this group six of the girls had decided upon their ultimate vocations. The remaining student made a vocational choice a short time later.

Frequencies for students with low to medium (= <50) total self-esteem scores were examined.

From the group of three students in this category, all had made firm vocational choices. These results mirror those of Study one and support the view that high self-esteem does not necessarily predict early vocational decision-making.

Vocational Interest as a predictor of final career choice.

The Holland VPI has three main uses; a brief personality inventory for high school students, an assessment technique for the investigation of career behaviour and an interest inventory. The Vocational Preference Inventory (VPI) was employed to address the three research questions regarding the role of vocational interest in career choice. The VPI has six scales relevant to vocational interest and eight dimensions relevant to personality. This study is analysing interest as an aspect of vocational choice and so the first six categories of the VPI index will be reported. These
vocational interest categories are Realistic, Investigative, Artistic, Social, Enterprising and Conventional. The “Masculinity/Femininity scale in the dimensions of personality are also examined so that research question nine “Is there a relationship between high scores on the Masculinity/Femininity scale of the VPI and non-traditional career choice?” could be addressed. “High” scores in the “M/F” scale indicate frequent choice of traditionally masculine vocational roles. A female with a “high” score is more likely to choose and occupation dominated by males (Holland 1985).

The VPI professional manual has been the source of defining “high” scores. In the scales studied “high scores” mean raw scores which are high in terms of an appropriate normative sample; that is scores with a high T score. High scores refer to T scores above 60. High scores suggest high interest in the vocation nominated in the inventory. Scores which were one point below the cut-off from the T score were included in the number of students with high scores in each category. This was considered appropriate due to the relatively small cohort in Study Three.

Only four students from a possible fourteen students in the group had high scores in Investigative and Realistic vocations. Seven students out of a possible fourteen in this group had medium to high scores on the Artistic sub-scale. Two students had medium to high scores in the Social category. Within the group, four students had a medium to high score on the scale which indicated Enterprising interests. Within the group, one student had a high score in the Conventional category. The high number of students with Artistic vocational interests could be attributed to the school’s strong commitment to a music and media program.

The frequency tables for subjects with high T-scores on the Holland Masculinity/Femininity scale (>=.8) together with traditional and non-traditional career nominations were examined. Within the sample cohort only two of the fourteen students had high Masculinity/Femininity scores. These two students did nominate a non-traditional career. This result is of interest due to the high number of girls (n=12) in this group ultimately choosing non-traditional careers. Eleven of the fourteen students who did not have high Masculinity/Femininity scores also chose
non-traditional career paths however. The only tradition vocation was that of the girl who wished to be a librarian.

The highest T score for each student in the sample group was extracted and examined. The students in group had interests distributed over the Realistic (2), Investigative (5), Artistic (3) and Enterprising (3) scales. No student in the group had a high T-score denoting Conventional vocational interests.

A description of Holland categories attached to ASCO occupations from the ASCO working draft of 1983, was examined. The Australian Standard Classification of Occupations (ASCO) working draft used Holland categories to describe occupations. These codes are a means of exploring the relationship between a person’s interest in life and the scope offered for fulfilling those interested in particular occupations.

Manual, mechanical, agricultural, electrical and technical competencies are usually involved in or developed by workers in Realistic occupations. For example, the occupation of engineer would be categorized as being Realistic. Investigative occupations would comprise creative investigation or physical, biological and cultural phenomena for the purposes of understanding or controlling them. The manipulation of physical, verbal or human materials to create art forms and products is categorized as an Artistic occupation. Photographers and musicians would be included among Artistic vocations where competencies in language, art, music drama and writing are common. Interpersonal and educational competencies are characteristics of people choosing Social careers. Psychologists, teachers and nurses are classified as being a Social occupation. Vocations in public relations and management would be examples of Enterprising careers where leadership skills and interpersonal and persuasive competencies are required. Explicit, ordered and systematic manipulation of data, such as keeping records, filing materials, reproducing materials, organizing written and numerical data according to a prescribed plan, are the skills required in occupations categorized as Conventional.
Does vocational interest measured on the VPI reflect final career choice?

This question seeks to examine and identify an expected continuum or connection from the initial vocational interests identified through the VPI to the actual career choices of the young women. The Australian Standard Classification of Occupations (ASCO) working draft 1983, was used to assign Holland RIASEC codes to the final career choice nominated by the two groups. The frequencies of the Holland sub-scales assigned to the final career choice together with the Holland codes for the highest “T” score on the RIASEC scales of the VPI were examined.

The highest RIASEC T score of the individual student was extracted and examined. The highest scores were distributed over four of the six scales. These were the categories of Realistic (n=2), Investigative (n=5), Artistic (n=3), and Enterprising (n=3). One student had a very flat profile. No score could be classified as being high for this girl. None of the group had high individual scores in either the Social or the Conventional sub-scales. RIASEC sub-scales for the final career choice was then examined. Two students had high Realistic interest scores. One of the students is studying to be a civil engineer the other is studying political science. Political science is classified as an Enterprising occupation. Five students had high Investigative scores on the VPI. The same five students nominated careers classified as Investigative. Two of these students are currently studying computer science, one is studying human biology, one is studying astronomy and the fifth is intending to be a librarian. Three students had high Artistic scores. Two these girls are taking up careers in the music industry. Three students had high scores in the Enterprising domain. The same three nominated careers classified as Enterprising. Of these, one girl’s ambition is to be RAAF intelligence officer and she has joined the Royal Australian Air Force in order to realise this. Two of the group are interested in the advertising industry. One is studying marketing because “I want to do something in the advertising industry” and the other is studying sales and marketing in order to be manager. The highly-able subject who had no high interest score was investigating a career in media production. These results indicate a high match between Holland codes and vocational choice.
What is the relationship between parental occupations and daughters’ vocational choice?

Seven of the mothers and nine of the fathers held occupations classified as professional. Nine of the daughters also wished to study within the professions. Three of the mothers held managerial positions and three of the highly-able girls chose administrative or managerial careers. One student with professional parents chose to study the para-professional category of media production. Two of the girls chose vocations in the same area as their parents. One girl who mother was a structural engineer and whose father was an electrical engineer also wished to become a civil engineer. Another of the highly-able group whose parents were both musicians also wished to become a musician. These results suggest that although there is no absolute match in parent/daughter career choice, the daughters generally do take up careers in the same ASCO category as their parents.

Only two of the fourteen girls were adamant in their wish not to take up their parent’s occupations. One did not wish to become a nurse like her mother because “it was too hard” and the other wanted to “shake off the farm girl image” of her farmer father.

Context and vocational decision-making.

The DMQ was developed by the researcher, to assess the importance of the variables associated with vocational choice identified in the literature and to examine the shift from the perceived interest of the variables to perceived influence and actual vocational suggestions.

Career Aspirations.

The majority of the subjects in the sample group (n=12) believed that it was “most important” that they would do further study after school. Thirteen students believed that they would find their careers stimulating. Ten students from a possible fourteen believed that advancement was “most important”. Two students believed it was “very important”. One student believed that advancement was “of some
importance”, and one believed the advancement was of no importance at all. This particular student planned a career in the music industry and she was certain that further study and advancement were not relevant to her vocational plans. Ten students believed that all three dimensions of aspiration were “most important”. These results mirror those of Study One where the students also believed that further study and stimulation in their ultimate career was “most important”, but fewer of them believed advancement in their chosen career was important.

Does self-esteem influence vocational aspirations?

High vocational aspirations have been liked in the literature to high self-esteem. For the purpose of this study students with high aspirations were those who answered “most important” to all three of the questions on the DMQ relating to vocational aspirations. High self-esteem was established by total scores on the SEI (≥75). Ten of the students from a possible fourteen had high vocational aspirations. Of these ten students, seven had high self-esteem. Two students with high aspirations had medium self-esteem scores. The remaining student with very high vocational aspirations had very low self-esteem scores. These results are compatible with those of Study One. Although high self-esteem and strong vocational aspirations have been identified in the literature as being linked, the results of the current investigation has found that high self-esteem is not a precursor to high vocational aspirations.

To whom would you go to for advice?

An examination of the frequency tables and case studies suggests that five students within the highly-able group specifically nominated advisors from “people in the job” or “people with skills in the area” or “friends in the industry”. Teacher and/or career and parent advisers were nominated by four students. One nominated her international studies teacher only, “because that’s the area I’m most interested in”. Another “my teacher and people who have interests similar to mine”. Parents in isolation were nominated by two members of the highly-able cohort. One of the two
students specifically nominated her father because “my dad wants me to go into a well paid profession”. One girl nominated her mother who was in a related profession.

*Perceived interest in career decisions of mother, father, teachers and friends.*

Four students, within the of the sample group believed their mothers took “a great deal” of interest in their vocational decision-making. Six students believed their mothers took “a fair amount” of interest. Six students in the sample believed their fathers took “a great deal” of interest in their vocational decisions. One believed her father took “a fair amount” of interest. However five students believed that their fathers took “very little” or “a little” interest in their decision-making.

No student in the sample group believed their teachers took “a great deal” of interest in their vocational decision-making. The perceptions of the other girls were evenly distributed and ranged from “very little” to “a fair amount”.

No student in believed that their friends took “a great deal” of interest in their vocational decision-making. However four of the highly-able cohort believed their friends took “a fair amount” of interest.

*Perceived interest in daughter’s vocational decision-making of parents with high status careers.*

It is documented in the literature that well educated parents have high educational and vocational expectations for their children (Super, 1990; Tomlinson-Keasey & Little, 1990). It would follow that parents with high status careers would have a high degree interest in their offspring’s vocational choice. And that participation in perceived higher status occupations such as medicine and law may be a consequence of this. For the purpose of this study, lawyers and medical practitioners were taken as representative of careers with perceived high status.

Within this group of highly-able females, there were no parents who were doctors or lawyers. Ten of the girls believed that their mothers took “a fair amount”
or “a great deal” of interest and seven girls perceived their fathers as having a comparable degree of interest. These results of Study Three would indicate that a perceived high status occupation is not indicative of the degree of interest in the daughters vocational choice.

*Perceived influence of mother, father, teachers and friends.*

Seven students in the sample group believed that their mothers had “some” to “a fair amount” of influence. Only one student believed her mother had “a great deal” of influence. This student viewed her mother as a role model. Another girl noted that her mother and God mother had **the most** influence on her vocational decision-making. This student had initially rated her mothers influence as “a fair amount”. Five of the fourteen students in the sample group believed that their fathers had “a fair amount” to “a great deal” of influence.

Five of the sample group believed that their teachers had “very little” influence over their vocational decision-making. Six students believed that their teachers have had “little” or “some” influence”. Three students held that their teachers had “a fair amount” or “a great deal” of influence in the vocational decision-making. One student wrote “I think my teachers had the most influence. They’re the only ones who know what I’m good at” (CS/21).

Six of the students in the sample group believed that their friends had ‘very little” influence during their career decision-making trajectory. Six girls believed their friends had ‘a little’ or ‘some”. Two believed their friends had “a fair amount” of influence. However no student believed that their friends had “a great deal” of influence on their vocational trajectory.

These results suggest that of the four variables, mother, father, teachers and friends the fathers of the highly-able cohort in Study Three had the most influence. This is an interesting observation in the light of the perceived influence of the of the peer group on adolescents, and, particular this cohort of girls who have spent their high school years with class of highly-able peers.

*Actual suggestions of career options by mother, father, teachers and friends.*
Eight of the fourteen students in the sample cohort believed that their mothers’ suggestions had “a fair amount” or “a great deal” of importance. Eight of the fourteen students believed that their father’s suggestions had a “a fair amount” or “a great deal” of importance. Five students believed that their teachers’ suggestions had “a great deal” of importance. Seven of the fourteen students within the sample group believed that their teachers’ suggestions were in the “little” or “very little” category.

Within the sample group, ten of the students believed that the suggestions of friends were of “little” or “very little” importance. Only one student nominated her friends as having “a great deal” of importance. These friends were currently involved in the industry to which the student aspired.

Comparison of self and views of your mother, father, teachers and friends

Seven of the students in the sample group believed that there was “a little” or “very little” difference in the views of their mothers and themselves. Four students nominated ‘some’ difference. Only one student nominated “a great deal” of difference. Seven of the students in the sample group believed that their fathers views were “very little” or “a little’ different from their own. Four students nominated “some” difference. Three students nominated “a fair amount” or “a great deal” of difference.

Seven of the fourteen students believed that the views of their teachers was “very little” or “a little” different from their own. Four students believed that the views of their teachers were “a fair amount” or “a great deal “ different.

Relative importance of the influence variables mother, father, teacher and friends.

In response to research question thirteen, “Which variable assumes the most importance in influencing vocational choice?” the relative influence of each of the variables, mother, father, teachers and friends were examined. The categories “a fair amount” and “a great deal ” were collapsed. These were the only dimensions then examined.
It would appear that fathers (n=5), and mothers (n=4) assume a similar degree of vocational influence in the perceptions of the fourteen highly able girls. Teachers were the most important influence for three of the girls and friends were the most influential for two of them.

*Is there a female figure you greatly admire?*

Research question eleven alluded to the degree of influence of the social domains. The influence of role-models has been identified in the literature as being of significance. The young women were asked if there was a female figure they admired.

Eight of the fourteen students in the sample cohort had a female figure they admired. These ranged from “mum”, politicians, singers and actors, “to “very high role business women”, a sportswomen and a God mother. Four of the girls reported that they had no role model.
Who is it?

Four students nominated themselves and their own interests, two students nominated scientists and three nominated entertainers. Mother, sportsperson, friend, politician and business woman were each nominated once.

It was of interest to note that although the eight of the girls in this highly-able cohort had role models these did not appear to exert a great deal of influence on vocational choice.

How much influence have female role-models had on your career decision-making?

There was a clear differentiation between role-models in the entertainment industry and visitors from industry. The frequency tables suggest that role-models in the entertainment industry, that is singers or actors had “very little” to “some” influence on vocational decision-making for the girls in this group.

Although eleven students believed visitors from industry had “very little” to “some” importance, three students believed that visitors from industry exerted “a great deal” of influence. These three young women all planned take up positions within the music industry.

It is of interest to observe that twelve of the group believed that role-models within education assumed “very little” to “some” importance. Only one student believed that educational role-models had “a fair amount” of importance and only one girl believed educators were of a “a great deal of importance. These same girls had nominated the influence of their teachers as being important.

The girls appeared to differentiate between famous women and eminent leaders. Although six students believed that famous women influenced their decision-making “a great deal”, only two of them believed eminent leaders influenced their vocational choice “a great deal”. Indeed seven students in the sample group believed that eminent women role-models were of “very little” importance.
Although the young women were prepared to nominate a female role model. Role models did not necessarily influence vocational direction. Of the five categories of role-model nominated by the researcher, these results indicate that famous women exerted more influence on the vocational decision-making of this group of young women role-models within the other categories.

*What variable is perceived by the subjects as being the most important?*

The subjects were asked to nominate the person(s) who most influenced their career decision-making.

Six students in the sample group nominated themselves and their own interests as being the most important influences in their vocational decision-making. Four students nominated teachers as having the most influence and two students nominated people in the job. Two students nominated their parents.

*Summary and discussion of results.*

Study Three is a qualitative investigation which comprised fourteen high-ability girls attending a single-sex high school in a Victorian regional city. The young women currently in Grade 12, were enrolled in an accelerated program for highly able Grade seven students. In the year 2000, the Coopersmith SEI, the Holland VPI and the Decision-making Questionnaire DMQ was administered by the researcher. The results were scored by hand and case studies compiled.

Seven of the fourteen girls in Study Three had very high measured self-esteem. When the four sub-tests were examined, no girl within this cohort had poor school self-esteem. The young woman with low scores on every other sub-test still had a positive school self-esteem score. It is well documented that high-ability young people who are educated with other young like minded people in gifted programs are found to have positive self-esteem.

The results in this investigation appear to confirm the observation from Studies One and Two that high self-esteem is not a predictor of early vocational
decision-making. They also support the findings of a Kelly & Colangelo, (1991) investigation which found that gifted girls were more certain of their career choice and did not delay vocational decision-making. Six girls within the seven students with high self-esteem had made a vocational decision. However the students with medium and low self-esteem had also made vocational choices. It must be appreciated that these young women had just begun the last year of their schooling. During the duration of their high school years they had been in a dedicated acceleration program for the gifted. The parents and teachers of the ALP girls would have a vested interest in the vocational success of the young women. It follows that the school, both teachers and classmates, as well as the home would have encouraged the selection of a course of tertiary study and vocational choice.

Vocational interest measured on the VPI was found to be highly commensurate with final career choice. The results of Study Three mirrored the results of Study One and Two. When vocational interest was measured on the VPI, all of the RIASEC categories were represented. When final career choice was examined twelve of the fourteen girls chose a career within the category of their VPI interest.

In this investigation high Masculine/Feminine scores were not the sole predictor of non-traditional career choice. Only two of the fourteen students had high M/F scores. Thirteen of the fourteen students chose non-traditional careers however. In the quantitative study high M/F scores did predict participation in non-traditional career choice. In Study Three, although the two girls with high M/F did select male dominated occupations, other factors must have impacted on the remaining thirteen young women the high-ability cohort. It would be reasonable to believe that the high vocational expectation of teachers and parents would impact on the young women. The high-ability girls would be encouraged to take up careers that would be seen to reflect their ability.

Although there was no absolute occupational match in parent/daughter career choice except in the case of two of the girls, the daughters did take up careers in the same ASCO category. One girl whose mother was a structural engineer and father an electrical engineer is studying civil engineering. Another girl whose parents are
musicians also is studying music. Only two girls did not wish to take up the occupations held by their parents.

The observations found in Study Three mirrors those of the quantitative study where high self-esteem did not predict high vocational aspirations. Ten of the fourteen girls had very high vocational aspirations. Seven of the ten had high self-esteem, the remaining three girls had very low self-esteem scores. It would appear that high vocational aspirations were a result of other factors which impacted on the high-ability girls. It could be expected that the young women in Study Three would have been exhorted by their teachers and parents to have high expectations for themselves from the time of their entry into the Accelerated Program at Grade 7 level.

The young women in both the quantitative and qualitative studies sought vocational advice from parents, career teachers and people in the industry (job). It was only the preferential order of the advisors that differed slightly. People in the profession or friends in the industry assumed slightly more importance than either careers’ teachers and parents for the high-ability young women in Study Three. In the quantitative study the high-ability girls sought vocational advice initially from careers teachers, secondly from parents and thirdly from people in the profession. The regional high school involved in Study Three has a policy of inviting people from industry to speak to all the girls not just the high-ability young women. People in the industry or profession may assume more immediate relevance for the young women in Study Three.

High interest in their daughters’ career choice was found not to be the prerogative of parents with perceived high status careers in Study One. This finding was confirmed by Study Three. Indeed the young women whose parents did not have high status occupations believed that their parents did have a high degree of interest in their vocational choices. For the purpose of this investigation, the criteria for “high status” parents in the quantitative study was medical specialist or lawyer. Although none of the parents in Study Three were medical professionals or lawyers, among the parents were teachers, managing directors, nurses, scientists and university lecturers. Any of these positions could be considered as having relatively high status.
It would appear that parental interest and actual suggestions of career options did not necessarily translate into vocational influence. The ultimate vocations of the group were similar to the vocational views their parents held for them however.

The findings from Study Three were a confirmation of Study One. The girls perceived that their parents did have a degree of influence on their career choices. Parental influence on the part of their father was less evident in Study Three however where mothers appeared to assume more importance for the young women. The actual vocational suggestions of both parents were deemed of importance for the and the majority of students believed the views their parents held for them did not differ greatly from their own.

The high-ability girls in the quantitative study believed that although teachers did make vocational suggestion that were seen as important they had very little influence over vocational decision-making. This finding was mirrored by the results in Study Three. No girl in Study Three believed their teachers took “a great deal” of interest in their vocational choices although four of the girls nominated their teacher as having “a fair amount” of interest.

Friends assumed even less importance for the high-ability girls in this study. Four girls believed that their friends were interested in their career choices and made actual vocational suggestions but this did not translate into influence. Although this result mirrors the findings in Study One, it is unexpected in the light of the literature which suggests that adolescents tend to compare and evaluate opinions with contemporaries and that high-ability young are more heavily influenced by a need for peer acceptance that non-gifted classmates.

The variables (mother, father, teachers and friends) were examined by collapsing the categories “a fair amount” and “a great deal” so that the relative influence could be observed. The results indicate that fathers and mothers were the most important influencers of vocational choice for these young women. Teachers
were the next most important and then friends. This result confirms the findings in Study one.

Although eight of the young women were happy to identify female role-models from among entertainers, sportspeople, politicians and family, apart from famous women, they did not appear to exert a great deal of influence on vocational choice.

The majority of subjects believed “interest” was the most important influence on their vocational choice. When the girls were asked to nominate the person or thing that most influenced the vocational direction six students nominated themselves and their own interests. This observation mirrored the findings in Study One. Only two students nominated parents as having the most influence, four girls believed that their teachers most influenced them and two girls nominated people in industry. However the dimension of interest that was expressed by half of the high-ability girls may well be a reflection of parental influence as well as the atmosphere and policies of their school.
Chapter Seven

Discussion

The current study is the first of its kind in Australia. It is therefore breaking new ground and is exploratory in nature. Its purpose is to identify those variables which influence the vocational decision-making of highly-able adolescent girls in Victorian schools. A subsidiary aim is to develop a model which encapsulates these variables.

This investigation is made up of three complementary studies. Study One is quantitative in nature and comprises both high-ability and average schoolgirls from the last three years of high school. The subjects were enrolled in either government, independent, single-sex and co-educational schools in the state of Victoria. Study One surveys compared both the highly-able and the average adolescent girls as they progress along a vocational trajectory. It reaches them at a time in their lives when they are actually experiencing the pressures and modifications that shape their future vocational lives rather than relying on retrospective memories. The question is posed: Is the way highly-able females deal with these considerations any way different to those of average young women?

Study Two is an extension of Study One and seeks to address change in vocational direction over time. Three years post Study One, ten highly-able girls aged approximately from 21 to 24 years of age, all participants in the original study, were invited to reflect upon the vocational decisions made while they were still at school. Through a semi-structured interview process they were asked to identify retrospectively the factors that they believe influenced their decision-making at the time. As these young women are still in the tertiary education system, or planning to return to it, they are able to discuss the vocational trajectory while it is still very relevant to them. During Study One the high-ability young women in Study Two were enrolled in independent schools. They were selected because they had all been formally identified as being gifted on objective measures. From these two studies should come either confirmation of the literature and/or new material.
Study Three is also qualitative in nature. It seeks to confirm and add depth to the original study by reviewing the issues that relate to vocational choice. The selected cohort of highly-able young women in the last year of high school were all involved in a dedicated accelerated learning program (ALP) in a Victorian government girls’ school. The subjects had also been formally identified on standardised measures as being gifted.

Study Three was highly confirmatory of Studies One and Two. It only differed from the quantitative study in the area of self-esteem. The majority of high-ability girls in the qualitative study did have positive self-esteem. The literature regarding girls involved in gifted programs and self-esteem is well documented. Gifted adolescents who are able to interact with true peers in an academic program commensurate with their ability have been found to have more positive school experiences with resultant higher self-esteem. It would appear that the more positive self-esteem apparent in the young women in Study Three could well be attributed to their involvement in such a program which is appropriate to their needs.

In this chapter all three studies are synthesised. The results will be discussed and the findings compared with those outlined in the literature. Limitations of the current study will be identified in Chapter eight and suggestions for further research will be proposed.

A small but consistent literature has identified both external and internal socialisers as being important determinants in the occupational decision-making of highly-able females. The external effects of the wider community of school, friends and the media, as well as the more immediate influencers of family are examined, together with the internal dimensions of self-esteem and interest.

The theories of Tannenbaum (1997), Walberg and Herbig (1991), and Walberg and Zeiser (1997) present a detailed examination of the predictive variables of fulfillment of promise as these interrelate. The interaction of the educational and environmental factors, identified by Tannenbaum as well as by Walberg and his
colleagues, directly influence learning in childhood and adolescence. In turn, these influence talent development, and possible adult eminence. This study has embraced the fulfillment of potential theories of Holland, Tannenbaum and Walberg while examining the possibility of constructing a model of vocational choice. In this study these variables are being viewed as possible dimensions contributing to a model of vocational choice.

The three studies which comprise this investigation seek to address research questions relating to, and directly concerned with, the vocational decision-making of highly-able adolescent girls. These relate to both external and internal factors that play a decisive role in career choice. The external dimensions are those of the family and wider community of school, peers and society as a whole. Internal influences are those of self-esteem and a dimension acknowledged as interest.

Also identified in the literature are the specific issues confronted by highly-able (gifted) young women which suggest that their experiences are different. It is proposed that the needs of these girls and those of the average young women are disparate. The findings of the current investigation suggest that there are relatively few vocational experiences that differ between the high-ability and average schoolgirls.

Studies examining the vocational choices of highly-able young women have been found to have several characteristics in common. Firstly, they have been undertaken during the college years of the subjects, or indeed many years later. Secondly, retrospective accounts of decision-making and the influences determining them have come from eminent and/or successful women. A third observation is that studies undertaken while young women are in high school have tended to focus on academic skills such as mathematics or the relative benefits of involvement in gifted programs rather than on vocational planning. This is the first Australian study to specifically focus on the variables influencing vocational decision-making at the time that these deliberations were actually taking place.
The qualitative technique of pattern matching have been applied to the data. Triangulation of the results obtained from these three studies provide the following answers to the research questions which have formed the basis of this investigation.

The aim of Study One was to examine, in a systematic way, the presence of those external and internal variables identified in the literature. Secondly to ascertain whether they are peculiar to high-ability young women or to young women in general and thirdly to identify which, if any of these variables was most important.

Ho 1: There is no statistical difference between the groups, high-ability and control in the variables influencing vocational choice.

When t-tests were applied to the non-categorical data, only nine from a possible twenty areas of significant difference between the groups, high-ability and control, were identified. These were in the domains of home, social and total self-esteem, aspiration, vocational views of mother father and friends, the actual suggestions of mother and the influence of media role-models.

Self-esteem measured on the Coopersmith SEI was found to be statistically different between the groups, high-ability and control on the subscales “home and social self-esteem”. The “total self-esteem” scores were also statistically different and an examination of the frequencies detected higher self-esteem among the non-gifted girls. Self-attitudes that relate to the immediate family and the home environment are reflected in the “home self-esteem” subscale. It could be expected that average schoolgirls may not perceive the same degree of parental expectations of success being imposed on them as girls with high-ability. An examination of the frequencies for both groups found that for the high-ability adolescent girls, self-esteem, linked to the home environment, was less positive when compared to their average classmates.

It is recognized in the literature that gifted students sometimes have more positive ‘academic selves’ than they do ‘social selves’ (Davis and Rimm, 1985). The significant difference reported in the “social-self-esteem” scale would suggest that the
high-ability young women in this investigation also may experience a lack of acceptance by age peers in the wider community.

The VPI was found to be predictive of final career choice for both groups. For both groups, no marked difference was observed between the VPI profile and final career choice. This finding will be discussed further in the discussion of research questions.

In the first year of Study One only eight out of the twenty questions on the DMQ relating to internal and external vocational influencers were statistically different between the groups. The differences were identified in the questions relating to vocational aspiration. The questions relating to the views of mother, father, and friends, the actual suggestions of the mother as well the importance of role models in vocational choice was significantly different also. In the second year of the study six items were statistically different between the groups. These related to vocational aspirations, fathers’ and friends’ interest and teachers’ views. There were only two areas of significant difference between the groups, highly-able and control in the final year of Study One. These related to the girls’ perceived prospects of advancement and their fathers’ interest.

The limited differences between the two groups could be attributed in part to an overtly egalitarian society in Australia. Special provisions and programs for the gifted are not commonplace within the Victorian education system. Highly-able young women are given the same societal messages as those presented to the average schoolgirl. Most young women in Victorian schools have been involved in equal opportunity and affirmative action policies within their secondary schools. The girls have been encouraged to believe in themselves and broaden their vocational choices. It the light of this it could be expected that the vocational aspirations for both groups would be the similar if not the same. This investigation found a significant difference between the groups in their vocational aspirations. This diversity will be discussed in relation to the literature.
“We were all encouraged to pursue an university education and professional careers- to be what you can be” (Case Study No. 7).

The impact of high aspirations is of particular relevance to the highly able adolescent female. Reflected in the data is the high degree of interest that parents and teachers have for the career choices of the highly-able girl. This interest could be viewed as high vocational expectations. The anticipation of success on behalf of those involved with her vocational choices is transmitted to the young woman through the interest and/or encouragement of these influencers. The premise of self-knowledge being important and therefore a knowing and accepting of one’s self is the basis for an association between self-esteem and vocational aspiration.

The current investigation found that high aspirations were statistically different between the groups, sample and control for two of the questions from the DMQ “I will do further study after school” and “I expect my career to be stimulating”. High aspirations were considerably more pronounced in the highly-able group. Vocational expectations experienced by the high-ability young women from their schools and parents, together with the high expectations they often have for themselves, would foster positive vocational aspirations. The results suggest that the strong self-belief systems found in many highly-able young women as well as the elevated expectations of parents and teachers may outweigh other considerations, such as lower self-esteem.

It could be argued that the healthy self-esteem of the control cohort, together with the affirmative action policies promoted in Victorian schools, would encourage high vocational aspirations within the control group also. This hypothesis was not supported by the findings in Study One. The vocational aspirations of the control group were significantly lower that those of the sample. There was no statistical difference between the groups in the question relating to prospects of advancement. This result is not unexpected. The young women at this stage in the investigation, were still at school. Doubts about academic results, together with then current unreliable job prospects may have caused the young women to be unwilling to project too far ahead. The result could also be a reflection of the vocational indecision resulting in an inability to choose a career much less expect promotion.
The same pattern was repeated in year two of the study. In year three there was a statistical difference between the groups in the question relating to expectations of advancement. The shift over time in the vocational aspirations of both groups could be attributed to the fact that the young women who continued to be involved in the study were either studying or employed. It could be expected that the young women who lacked vocational aspiration could be found in the missing data (n=31). However this assumption is questionable as only three young women found within the missing data also had low aspirations in the first year of the study.

In Study One the views of the both mother and father were statistically different between the groups. The members of the control group perceived that their parents’ views and were not very different from their own. Less than a third of the high-ability girls believed however that their parents’ views were very important or that their parents’ views and their own views were similar. This outcome could be attributed to the wider vocational options available for academically able young woman in today’s society. Undertaking non-traditional occupation is a more acceptable option for high-ability young women. A majority (56%) of the high-ability girls in the investigation did choose vocations that were dominated by men. Their mothers on the other hand may not have envisaged these occupations as being appropriate for themselves when they were the same age and therefore would not have suggested them for their girls. Conversely, some mothers with very high aspirations for their daughter’s may be confronted with a young woman who has no wish to take up an occupation that her mother perceives as being suitable for her. In the second and third years of the investigation there was no longer a statistical difference between the groups.

There was also a statistical difference between the groups in the first year of the study in relation to the vocational expectations held for the subjects by their friends. Although girls in both groups believed that their friends’ views for them were not very different from their own the perception was far more pronounced in the control group. The average schoolgirls believed their friends’ views were very similar to their own whereas the high-ability girls indicated a wider divergence between their
own occupational interests and the views of their friends. The stronger peer influence for the control group was observed over all three years of Study One although in the last year it was no longer statistically different.

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent. When the young women in this investigation focused on career choice however, the views of their friends did not appear to play an important for either the high-ability or control cohort

The control group appeared to assign more importance to the influence of media role-models than did the sample. There was a significant difference in the first year of the study only. Although there was no statistical difference between the groups in the second or third year of the study, these perceptions remained relatively constant over the three years.

The findings of the investigation are discussed in an analysis of the three integrated studies.

Discussion of research questions

Six questions were posed. These will be restated and considered on the basis of the results of the data collected from the seventy-seven high ability and forty-nine average girls represented in the qualitative and quantitative studies that made up this investigation.

What is the relationship between parental occupations and daughter’s vocational choice?

“I realized I wanted to work with people like my father did, healing them” (Case Study No. 4).

The quantitative investigation found that although the actual careers nominated by both the highly-able young women and the control cohort are identical
to those of their parents in only a few instances, the girl did choose occupations from within the same broad occupational categories as their parents.

The qualitative investigations mirrored the observation that parents do have marked influence over the general category and status of the careers their daughters select. The parents, through modelling, encouragement, and social standing within the community, influence the young women to choose a career that is socially acceptable in the context of their own values. It is well documented that the aspirations and the values of the parents are communicated to their children in numerous ways. These may be transmitted formally or informally through direct modelling and advice, or simply by encouragement and support. It would follow that well educated parents with highly regarded careers would be likely to give their daughters positive and affirming messages about attending university or college, the assumption being that their children receive an education comparable to theirs.

The high-ability young women tended to select vocations with the same perceived status as their parents or higher. Although they did not choose the same occupation they tend to select careers that are commensurate with those of their parents. Professional parents tend to have daughters choosing professional careers. Parents who were not professionals also had daughters choosing professional careers.

Within Victorian schools the educational experiences of highly able girls is not differentiated from those of average schoolgirls. This phenomena, found within both the sample and control cohorts, could be attributed to the Victorian Education Department policy of Equal Opportunity and Affirmative Action in schools where all young women, not just highly-able females, are actively encouraged to “break the glass ceiling” and “be what you can be.” Half of the highly-able group (50.7%) had medium to high scores in the Status sub-scale of the VPI. According to Holland (1985) high Status scores are indicative of vocational choices with high prestige ranking. Holland’s view was that they may also represent a crude measure of the need for upward mobility. The much higher number of gifted daughters choosing professional careers would attest to this. The high-ability girls in the qualitative Study Three did not have high Status scores however. This is an interesting observation in
the light of their parents not having the perceived high status careers such as law or medicine. It would appear that the selection of high status careers per se were not an issue for the young women in Study Three.

The qualitative data allowed the data to be viewed in more detail however. An analysis of the results of Studies Two and Three found that daughters generally were not adverse to taking up careers similar to that of their parents.

The girls who did choose the same career as their parent did so often to please their fathers. This occurrence of daughters wanting their father’s approval is well documented. Girls conscious of the social standing of their parents choose vocations at a similar level, or at a higher level of perceived importance than their parents. Although there was a much higher percentage of daughters choosing professional careers in the highly-able and the control groups than their parents, it was more pronounced in the sample. These highly-able young women have often held leadership positions within the school where they had exposure to affirmative action policies where their participation in non-traditional careers has been actively encouraged.

“I suppose my father, due to his career, has taught me it would not suit me. I would prefer to spend more time with my family than my father does”. (From anecdotal comments in Study One)

The literature has identified the parents’ occupations as being an important indicator of the family’s socio-economic status. Well-educated parents have been found to have high educational and vocational expectations for their children “My dad wants me to go into an important, well paid profession” (Case Study No. 14). The literature reports a perceived pressure for highly-able young women to choose high status careers and has identified the occupational level attained by an individual, is determined by the parent’s socio-economic status. It would seem likely that parents with high status careers would invest considerable interest in their daughter’s occupational choice.
Does self-esteem influence vocational aspirations and early vocational decision-making?

This question examines career efficacy or aspirations and self-esteem. The results of the current investigation suggest that measured high self-esteem is not a predictor of high vocational aspiration for the high-ability girls.

It has been found that high aspirations impact on vocational choice and that this is particularly relevant to the highly-able adolescent (Casey & Shaw, 1998). Kerr has suggested that that gifted girls prior to adolescence have high career aspirations which, by the end of their secondary schooling have modified and become less ambitious. Kerr, (1991) has referred to “adjustability”. She established that the gifted young women in her study had become well adjusted and conforming. This erosion of vocational aspirations has been attributed to the need of many highly-able girls to compromise between their earlier more ambitious dreams and a society which rewards sociability.

The finding can be illustrated by reference to self-esteem being comprised of two dimensions. These are “feeling good” and doing well” (Seligman, 1995. It follows that the “doing well” aspect of self-esteem is linked to aspiration. Many of the highly-able girls in this investigation have been selected by their schools on the basis of their academic success at school. Generally the highly-able girls have developed the “doing well” facet of self-esteem. The “feeling good” aspect may not be quite so strong. The girls would have other social and environmental influences impacting on their personal self-esteem. The literature identifies conflicting societal messages which encourage girls to develop their talents but also to retain their Femininity and remain acquiescent, to a school culture that does not value clever girls. The that the measured self-esteem identified of the highly-able girls may not be at all relevant to their high aspirations.
This investigation has identified measured self-esteem at home as being lower for the highly-able girls than the control cohort. Questions in the Coopersmith SEI relating to self esteem in the context of the family such as “I get upset easily at home” “My parents usually consider my feelings” “My parents understand me” are indicative of a perception on the part of the girl as to how she and her parents interact. Negative responses to these questions are indicative of low home self-esteem.

Vocational aspiration was not adversely affected however. In both the quantitative and qualitative studies high-ability girls with low self-esteem had high vocational aspirations. This result supports the findings of Kelly, (1993) which identified academic achievement as an important influencer of career efficacy. The marginally higher self-esteem within the control group could be expected. These girls could well have less pressure placed upon them by parents and teachers to attain to high vocational goals.

A link between high self-esteem and affirmative vocational decision-making has been reported in the literature. Students with positive self-concepts tend to make earlier vocational decisions (Grant et al, 2000; Kishor, 1981; Super & Bohn, 1971; Greenhaus, 1971). Conversely, students who are shy and lacking in self-esteem are found to be more likely to encounter problems in vocational decision-making because they are generally more vocationally immature (Hamer & Bruch, 1997; Lucas & Wandberg, 1997).

The results from studies One and Two indicate that there was not a strong causal link between high self-esteem and early vocational decision-making within the highly-able cohort. However when examining students with poor self-esteem it appears that the non-gifted girls are still able to make viable vocational decisions although the highly-able girls cannot. The highly-able young women were even less likely to make an early vocational choices than those in the control group.

It has been suggested however that this phenomenon is not necessarily an effect of high or low self-esteem but rather other factors that cause career indecision in the highly-able young woman. Career indecision is associated with multi-potentiality: being confronted with an abundance of options. Often multi-talented
students suffer debilitating career indecision, making the problem of vocational
decision-making even more problematic. Multiple goals held by the young woman
with more than one talent often leads to conflict and difficulty in identifying and
following up a specific career path. The problem is quite straightforward, high-ability
and high achievement offers wider vista of vocational options.

When this phenomenon was viewed using micro-analysis nine of the possible
ten girls in the qualitative investigation Study Two attributed their vocational
indecision to a variety of inhibiters. Self-doubt, trying to please father, and chance
factors impacted on their change in vocational direction. No girl identified the
availability of too many options as being the cause of her vocational change in
direction. Self-esteem was not identified as an issue for these young women. Only
one girl had poor self-esteem.

Within the group of fourteen highly-able girls in the qualitative investigation,
Study Three, seven students from a possible fourteen had a high self esteem score.
This comparatively high percentage of very positive self-esteem could well be
attributed to their being in a dedicated program for the gifted. This is consistent with
the findings of Feldhusen et al., (1990) who found that gifted females in dedicated
programs for the gifted have high self-esteem. A powerful feeling of acceptance and
validation experienced by gifted peers engenders high self esteem (Webb,1993). The
young women in this special accelerated program were encouraged to make career
decisions commensurate with their ability. The school also had a vested interest in
ensuring the girls had adequate vocational guidance.

A sizable minority, 42.9% of the students in the sample were educated in single sex
schools. Several of the high-ability girls in the qualitative study (Study Two) made
reference to the support and encouragement they had received at an all girls’ school.
Two of the girls made the observation that this support was not evident at the co-
educational schools they subsequently attended.
Does vocational interest measured on the VPI reflect final career choice?

Interest was the most important influence”. (Case Study No. 3).

“I should have listened to the careers advisor after all”. (Case Study No.10).

The longitudinal aspect of this study was to observe, over time, any changes made in the vocational choice initially nominated and final vocational choice. The frequency tables for the sample and control groups were examined separately. The chronological aspects of the investigation can be viewed in both Study One and the qualitative Study Two. In the quantitative investigation, Study One, there was a three year interval between initial career choice and final career choice. The qualitative study invited a longitudinal view of the vocational choices of the high-ability girls after a six year interval.

The results of Study One suggest a strong degree of congruence for both groups when vocational interests transport into actual vocational choices. The highest individual Holland interest category and ultimate career choice appeared to have a high degree of correspondence in the Investigative, Artistic, Enterprising and Social categories for all subjects in the sample. There was a small shift in the translation of Realistic, and Conventional interests into comparative careers.

The match between the highest VPI score and final career choices for the control group were slightly less pronounced. There was a high degree of congruence in Investigative interests and subsequent occupations. There was a shift in preferences when vocation interests in the Enterprising, Social and Conventional) categories did not translate into Enterprising or Social careers. The girls with interest categories classed as Enterprising or Social translated them into either Conventional or Investigative occupations.
In Study Two vocational interest measured on the VPI in the first year of Study One was still highly predictive. Eight of the ten young women were studying or employed in the areas of their original VPI interest profile.

When the high T scores in the qualitative investigation, Study Three were observed, the VPI interest profile for this high-ability group mirrored that of the whole population in Study One, that of predominately Investigative vocational interests and then a relatively even spread over the Realistic, Enterprising and Artistic categories. The greater representation of Artistic interests within this group could be partly attributed to the strong music program at this school. The interest categories identified in this investigation were fostered by the student’s environment existing within the home and the school.

When making vocational decisions, matching the individual’s interests with those characteristics required by specific occupations has a long tradition within psychology. In vocational psychology, interest is taken to mean a ‘preference for’, ‘liking of’ or ‘enjoyment of’ specific roles and/or activities associated within the context of work. Interest themes have been recognized as important predictors of educational (subject) choice and ultimate vocational preferences. The construct of interest, reflected by subject selection, appears to be an important predictor of vocational choice. It is a generally accepted phenomenon that interest engenders success. Success in academic subjects in school have been found to predict career directions. From this premise the current concept of “interest” or “subject selection” in vocational choice has developed. In the quantitative study as well as the two qualitative studies, the subjects in both the high-ability and control cohorts nominated interest and/or inspiration as being an important vocational influencer.

When viewed together, the findings from Studies One, Two and Three indicate a strong affinity between vocation interest measured by the VPI and final vocational selection in the Investigative, Artistic, Enterprising, Social and Conventional categories. The exception was within the Realistic domain. There was a small shift from Realistic interests identified by the VPI, into Enterprising, Social and Conventional occupations.
A small number of subjects did have high VPI scores in more than one category. It follows that the second highest score on the VPI profile may well be commensurate with the subjects’ final career choice. This being the case an ever higher degree of congruence is possible. The theories of Holland, together with the finding of Naylor (1993), are strengthened by the results found in the current investigation.

High scores on the Masculinity/Femininity scale were highly predictive of non-traditional occupations for the high-ability groups in the qualitative study. However the high-ability cohort in the three studies selected non-traditional regardless of M/F scores. The literature has identified a congruence between women who chose non-traditional careers and their Holland vocational interest/personality type of Masculinity/Femininity. Women with high scores are more likely to have an interest in vocations dominated by men. Holland identifies these women as being more masculine personalities. That is that they are likely to be less strongly influenced by occupational stereotyping and more likely to choose non-traditional vocations.

The findings of this investigation would strongly support the premise proposed by Kelly, (1993) that real progress has been made by gifted adolescent females in conquering the negative effects of gender socialising on occupational self-efficacy and interest. Kelly found that that achievement was inversely related to interest in traditionally female careers for young high school females. He believed that gifted young women appeared to be developing occupational interests based more on the actual vocation than on the gender appropriateness of careers. The results of this investigation indicate that highly-able young women are no longer avoiding vocations seen as only suitable for males. The gifted young women in Study One (1994/95/96), and Study Three (2000) tended to express less interest in traditionally female careers.

It is identified in the literature that high achievers are not interested in careers that may limit their professional growth, creative expression and personal financial
rewards. For highly-able girls, occupational interests based more on the actual work of careers than on the gender appropriateness of these occupations, has more relevance. The findings in Study Three sustain this view.

There is reference in the literature to women with androgynous qualities being more able to cope with societal pressures (Howard-Hamilton Robinson, 1991 Moir et al., 1991). The Howard-Hamilton Robinson study found that a high proportion of adolescent gifted girls in Governor’s schools in the USA displayed characteristics evident among young males. In women, the attributes of self-reliance, dominance and leadership seemed to be associated with achievement related behaviours in general and non traditional careers in particular.

A previous study by Lea-Wood and Clunies-Ross, (1995) found that many of the high-ability Australian girls in their study had significantly poor self-esteem compared to their average classmates. The girls in that study qualities who answered “like me” to the question “I really don’t like being a girl” may have had androgynous qualities. Such attributes have been identified in the literature as being associated with the achievement related behaviours of relatively high self-esteem and coping mechanisms. (Howard-Hamilton & Robinson, 1991; Lea-Wood & Clunies-Ross, 1993; Moir, A. & Jessel, D. 1991). It is evident in the findings of the current investigation however that very few of the highly able young women in this investigation answered “like me” to the question “I really don’t like being a girl” on the Coopersmith SEI. Since the Lea-Wood and Clunies-Ross study, educational initiatives for girls advocating leadership roles and non-traditional careers for women have been promoted in Victorian secondary schools. The Action Plan for Girls in Education (1989) directed Victorian schools to develop strategies to affirm young women. It would be reasonable to assume that the strong affirmative action policies in Victorian schools which have actively encouraged young women to take up leadership positions have allowed assertive young women to feel empowered and confident in nominating non-traditional vocational roles highly able young women are choosing high status careers such as medicine and law still dominated by men. Few young women in the current investigation took up vocations in management.
This would appear to be a reflection on the lack of female role-models in management within the Australian workforce.

When examining initial career choice compared to final career choice in the quantitative investigation, Study One, there appeared to be a degree of stability over the three years for the highly-able girls. Of the control cohort, 60.4% nominated professional careers as their in their early career choice. Careers in the para-professional category were nominated by 14.6% of the students. In the final year of the study, 70.8% of the control cohort still nominated professional careers. However 12.5 % of the control group now nominated careers in sales and service. This would be indicative of a more pragmatic approach to vocational choices when the realities of academic results and an uncertain job market become apparent.

This phenomenon was substantiated in the findings of Study Two. Six years had elapsed since the girls had made an initial vocational choice. The progressive change in career options of nine of the ten subjects was significant. It suggests strongly that other influences must have assumed importance since the days of formal schooling. Only one high-ability young woman is embarking on her original career. The remaining nine subjects have changed career options for a variety of reasons. These include being unsuccessful in their quest for university acceptance, to relinquishing “romantic notions”, failing their course or changing their minds after realizing that they were not suited to the option they chose. Of these nine, four students who realised they had chosen the wrong career could indeed be identified as multi-potential.

When the quantitative and qualitative studies (One and Two) were triangulated and then viewed for commonalities, it was found that the components of self-doubt, trying to please father, chance factors including illness, were linked between the two studies. No student indicated that her change in vocational direction was due to her multi-potentiality. Of the nine students with career changes, only one did not have high vocational aspirations. It was of interest to observe that eight of the subjects were involved in gifted programs and nine girls believed their schools supported them by promoting equal opportunity policies.
The results of this investigation would support the literature pertaining to vocational development of highly-able children which proposes that although occupational interests for average students stabilises by age sixteen, the vocational trajectory for gifted students is more complex. Indecision and changes in the highly-able girls’ vocational plans are generally attributed to the implications of their high-ability and multi-potentiality. The gifted girl is often confronted with more than one acceptable career option. As a result confusion is experienced by gifted adolescents who, according to Buescher, (1985) are intolerant of ambiguity. Anxiety may result for the highly-able girl who is often pressured by her school and family to apply for a very competitive course such as medicine or veterinary science at university. Although some very focused highly-able children seem to decide their future careers even before they enter school, many gifted youth complete high school with no idea of what vocation to study and to ultimately take up when they leave.

Is there a change in the relative influence of the variables over the six years of the investigation?

Factors within the subject’s community or frame of reference which play an important role in the adolescent’s vocational choices are referred to as social influencers. The mother, father, teachers, friends and role-models in the media have been identified as important socialisers which impact on vocational choice. Tracing the shift if any from perceived interest to perceived influence to actual suggestions of career options was a major focus of the study. Of the above variables, the influence of parents was found to be the most important for both groups in both the quantitative and qualitative studies.

Mother/Father

This investigation found that for the sample only in Study One that mothers had marginally more influence over their daughters’ vocational choices than their fathers did. Over the next two years of the investigation the perceived influence of the mother diminished for the high ability girls as wider social influences came into play. For the control group however the fathers’ influence was always the more important of the two.
A change is evident from the quantitative to the qualitative data. In the qualitative studies fathers did assume far more importance in their high-ability daughters’ vocational decision-making. It could well be that when the highly-able subjects in the quantitative investigation, Study One, were asked to nominate the influence of their mother and father on a numerical (Likert) scale, they had difficulty in, or perhaps were unwilling to, differentiate between their parents. The subjects in the qualitative studies appeared to have no such dilemma. Six out of ten high-ability young women in Study Two and five girls in Study Three reported that they were more powerfully influenced by their fathers than their mothers. This influence was both negative and positive. Several of the young women in Study Two took on a particular vocation simply because they wanted to please their fathers.

The results of this investigation would seem to substantiate the view expressed in the literature that the parents of career-focused young women appear to have more limited influence on their daughters and that the adolescent’s desire for self-identification may engender a conflict in the relationship between parent and daughter. Consistent with the theories of adolescence, many highly-able young women paid considerably less attention to parental guidance preferring to rely on systems of self-belief. Indeed many of the high-ability young women in the qualitative studies expressed the belief that their own interests were of paramount importance.

**Teachers**

This quantitative investigation has found that there is no significant difference in the way the adolescent girls in either group viewed their teachers’ interest or influence on, their career decision-making. The highly-able young women were just as unwilling as the control cohort to identify their teachers as being interested in, or having influence on, the course of their vocational trajectory.

Teachers in general and, career teachers in particular were the first vocational advisors for many of the young people. This initial confidence of the subjects in their
teachers did not appear to last however. Teachers were viewed by both the sample and the control groups as having “some” or “a little” rather than “a great deal” of interest in their vocational decision-making. A similar percentage of girls believed their teachers vocational suggestions were of any importance. Even though the girls believed that their teachers’ vocational views and those of their own were not at all different, the girls in both groups did not believe that their teachers had a “great deal” of influence on their career choices.

This perception was mirrored in the qualitative studies. Seven out of ten of the highly-able girls expressed the view that their teachers played no significant role in their career choices. Eleven of the fourteen students in Study Three believed that their teachers had only a “little” or “some’ influence on their occupational choice.

The Melbourne educators at the career teachers’ forum in 1996 were not strongly attached to the view that specialist careers teachers and guidance officers should be the only ones to help meet the career education needs of students. The findings of this investigation would suggest that this was a wise observation. Both groups of young women did not appear confident that their teachers were interested in their vocational choices. The young women in both groups believed that teachers did not influence their decision-making to any degree. This could be attributed to the somewhat negative view that some adolescents hold toward their teachers. It is more likely that the students see their teachers as not being knowledgeable enough in the areas in which the young people wish to study.

An Australian study by Teese, (1997) found that those students who were in curriculum streams that are the least likely to lead into higher education are the least likely to agree that school career teachers assisted them with their vocational planning. On the other hand those students who are in the curriculum streams that have the strongest links with university are the most likely to agree that the school helped them with their vocational planning. It would follow that the high-ability girls would find their teachers more influential. This was found not to be the case.
Although none of the schools in this study could be classified as disadvantaged, all of the independent schools in the investigation were considered wealthy. In relation to these more affluent schools, the students in government schools could be viewed as having less privilege. The results of this investigation pointed to very little difference in the way the students in the two school systems viewed their career teachers. All of the schools involved in this investigation did have “career teachers” as such. It may well be that career teachers in independent schools view themselves as being more accountable to parents. They would perhaps have a more overt presence in the career planning of their students. The student may well perceive them as being marginally more interested because they were visible and proactive in the field of career guidance.

**Friends and peers.**

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent and different perceptions are offered in the quantitative and qualitative studies. When the young women in this investigation focused on vocational decision-making, the interest, or suggestions of friends did not play an important role in influencing vocational decisions of either the high-ability or control cohorts. This perception was not to change over the three years of the study for the highly-able girls.

There was a statistical difference between the groups in the first year of the quantitative study in relation to the vocational expectations held for the subjects by their friends. Although the girls in both groups believed that their friends’ vocational views were not very different from their own, the perception was even more pronounced in the control group. The control group were more influenced by their friends in the last year of the study also. The influence was no longer statistically different between the groups however.

The quantitative studies substantiate this result. Only two high-ability young women in Study Two attributed any vocational influence to a friend or peer. Over the three years of Study One only three students believed that their friends had “a great deal” of influence on their vocational trajectory. In Study Three four of the fourteen
highly-able young women believed their friends took “a fair amount” of interest in their career choices. Only two of these girls believed their friends had “a fair amount” of influence on their occupational choice.

The results point to the premise that even though the interest, suggestions and influence of the friends were not great, the final career choices of the high-ability girls were commensurate with the expectations held by their friends. Young female adolescents tend to compare and evaluate their opinions and abilities with their peer group at school where they are able to relate their performance with others of their level of aspiration. It would follow that high achieving young women would seek out other high achieving females with whom to compare their vocational aspirations. The high-ability girls would have similar vocational aspirations to their friends but their academic competence would ensure that they had more career options from which to select. The control group in this study was found to have lower vocational aspirations. It would follow that the lower aspirations of the control group would preclude them from the wider range of vocational choices enjoyed by the high-ability girls. It would be reasonable to assume that the friends of the average schoolgirls would have common vocational goals. As it is also reasonable to assume that the friends of the high-ability young women would support each other in their more ambitious career choices.

**Role models, mentors and the media.**

This results of this investigation indicate that although the girls were happy to nominate a female role model as being reasonably influential in their lives these role-models did not assume a great deal of importance in their vocational decision-making.

Role models are individuals to whom a highly-able girl can aspire or emulate. It is generally accepted that mentors have a more overt influence on their protégés than role-models. Mentors spend time with the young person guiding and encouraging their young charge. It is proposed in the literature, that mentors enable highly-able able young people to think productively about their vocational plans, and ultimately make focused decisions.
Much of the literature examining the benefits of female mentors for gifted young women comes from studies of college students or eminent adult women. Women themselves report increased self-confidence in their vocational capabilities if mentored by a female. Mentoring of gifted students, as such, is in its infancy in Victorian schools. Mentoring “on line” using internet facilities to link young women with mentors is a very new concept. Some schools regularly invite speakers, often referred to as mentors, from industry to address their students. Unless the school is a girls’ school however, these presenters generally are men. There appears to be limitation in the way the area is being analysed and studied and what is actually happening in Victorian schools.

In Study One the question relating to the influence of role models on vocational choice was explicit. The girls were asked to comment on the importance of role-models in the media in regard to their vocational decisions. The subjects were also encouraged to make anecdotal comments. Questions relating to role models were given a wider frame of reference in the later qualitative studies. It must be appreciated that Studies One and Three of this investigation took place when the highly-able girls were still in school and had not considered female role-models or mentors to quite the extent an older female might. The qualitative Study Two took place when the girls were three to five years older. They had more experience of life and were in a better position to seek out and recognize mentors.

In the first study, neither the sample nor the control cohort believed that role models in the media had very much influence in the context of their vocational decision-making. This impression did not change over the three years of Study One. It was not until the qualitative study three years later, that two of the ten young women appreciated the considerable of influence role models in the course of their vocational trajectory. It is of interest to note that neither of those intellectually able young women had attributed any importance to role models during Study One. In Study Three, eight of the fourteen students in the sample cohort nominated an admired female figure. These ranged from “mum”, politicians, scientists, singers and actors, “very high role business women”, a sportswomen and a Godmother
The influence of the media on our lives is immense. The way young women compare themselves with others is constantly reinforced through the media. The manner in which socially acceptable young women should behave is constantly alluded to in all forms of mass communication. The many current articles referring to the motherhood versus career debate are prominent. The pervasive messages given to young women are subtle. A recent caption in a Melbourne newspaper\textsuperscript{12} announced “Brainy, after a fashion”. “\textit{Olivia’s brains are obscuring her beauty}”. Olivia, an attractive psychologist, was portrayed as a role-model, someone worthy of media attention. During the day Olivia is a fashion model, at night according to the article she “…slips into her moonlighting role as a psychologist”. The article related the fact that “far from Figurehthing the bimbo-model stereotype when she’s at her day job, she can’t embrace it fast enough”. “It’s a nice change- I don’t have to impress people with my mind”. “The old saying is true she reckons- that you have to be smart to play dumb …it’s so true you have to play the game.”\textsuperscript{13}

The message is loud and clear. Play down your “smarts” and you too will be a person worthy of media attention. A recent episode of “Neighbours”\textsuperscript{14} a popular Australian “ soapy” found the popular female lead in a dilemma. Should she fight against discrimination of pregnant women in the workplace or just accept it, drop the case, and continue on with her pregnancy? She decided not to continue with the discrimination litigation. “My baby is the most important thing”. The script of “Neighbours” is an option for study in Grade 12 in the Victorian Certificate of Education.

resistant to the effect of the media. The results of the later qualitative studies found The role models nominated by the young women in Study Three were all promoted in the media. Singers, actors, important business women and female politicians were all cited by the girls as role-models. The girls in the qualitative Study Two also nominated role models from the media, television and news articles. The young women in the first investigation did not believe the media was overtly

\textsuperscript{13} Melbourne \textit{Herald-Sun} Saturday August 18\textsuperscript{th} 2001
\textsuperscript{14} Episode Thursday 22\textsuperscript{nd} August 2001.
influential. It could be argued that these young women were not immune to the influence of the media after all.

Which variable is perceived by the subjects as being the most important?

“Career…a field in which your interests are displayed”
(Case Study No. 3)

Although this particular question was presented to the high-ability young women in the qualitative studies only, approximately half of all the young women in the quantitative study nominated “interest in” or “inspirations” as important vocational influencers (DMQ No.24 What else influenced your career choice?). In the qualitative studies the students were invited to nominate who or what had the most influence on their career choice. In Study Two, when the girls were asked to nominate the most important factor impacting on their vocational choice they seemed unable or unwilling to choose just one dimension. Several girls nominated their parents as being the most influential people in their career choice. Three girls specifically mentioned their fathers. This influence was seen as positive as in modelling behaviour or indeed negative, and perceived as parental pressure. It would be reasonable to believe that because all the girls mentioned the concept of interest in vocational choice it was very important issue for them. Six students in Study Three nominated themselves and their own interests as being the most important influences in their vocational decision-making.

The construct of interest was expressed in many different ways. In this study, interest as a concept, was shaped by issues within the highly-able young woman’s environment. The various environments were reflective of Bronfenbrenner’s (1977) environmental model and represented by the home (parents and relatives), industry (people on the job), the media, friends and parents of friends. The values and attitudes of parents, the atmosphere and policies of their schools, people in the workplace together with friends and the wider influence of the media all impact on the development of vocational interest.
Was there a change in the stability of vocational direction over the six years?

This investigation has found that although the high-ability girls in Study Two had made a firm vocational decision by the completion of high school, the stability of their vocational trajectory was not assured.

In examining the data from Study Two at a qualitative level, an important aspect has been the change in the vocational trajectory of nine out of the ten high-ability young women. Only one of the ten subjects has steadfastly pursued a linear vocational trajectory from an early age. The occurrence of nine changes or modifications in vocational direction was observed within the triangulated data and can be attributed to various environmental experiences.

Self-doubt has been identified both in the literature and in this investigation as being a major cause of career modification and change. Self-doubt was manifest in a variety of ways, from lack of confidence in intellectual ability and/or career efficacy through to illness in the final years of schooling. Whether self-doubt was a direct result of illness, or the reverse, is arguable its influence is not.

Chance factors were identified as impacting on vocational change. It could be argued that illness is also a chance factor. The illnesses experienced by the high-ability young women in Study Two could indeed be attributed to self-doubt and stress.

Identified in this study is the negative influence of some fathers on their daughter’s confidence and resultant vocational change. The self-doubt experienced by these young women could be attributed to perceived pressure from their fathers, or it may have been a function of self-imposed pressure in respect of school performance they struggled with career indecision and the resultant anxiety.

The issue of multi-potentiality has been identified within the literature impacting on career choice. The problem is quite straightforward, high-ability and high achievement offers wider vista of vocational options. Because young people who
are highly-able are confronted with more vocational of often multi-talented students experience career indecision, making the problem of occupational choice even more of a dilemma.

Within the qualitative investigation, multi-potentiality was not overtly identified by the girls as an issue in their change in career direction. This does not mean it was not present. Many of the young women in both the quantitative and qualitative studies could be described as achieving in more than one domain. Indeed anecdotal comments from the girls did show preferences for more than one career. By the end of high school however they appear to have settled on one course of study. This could be the result of one of several factors unique to Australian society and educational practice. Firstly, it is now becoming more acceptable to have a “gap” year between school and study where young people can reflect on their vocational choice. Secondly they may have the opportunity to change study options after one successful year at university. Irrespective of this, Australian adolescents are expected to select a specific tertiary course of study in Grade 12. The last two years of high school, the Victorian Certificate of Education (VCE) are a preparation for final vocational choice. Subjects selected by the students in Grade 11 are generally prerequisites for their university studies. Thirdly, Australian society is egalitarian and within Australian culture self promotion or “big noting” is considered unacceptable behaviour. The girls in the quantitative study may well have been reluctant to indicate an ability to undertake more than one study path. The girls in Study Two were older and further removed from school. They had the opportunity to engage with the researcher on a personal level. Their ability to choose from an array of vocational options was not identified by the girls as influencing their change in vocational direction.

Self-doubt, father’s influence and/or trying to please him, chance factors, illness, as well as the influence of media role models emerge as factors impacting on a change in vocational direction for these high-ability young women. It would appear that all the factors interact and are a direct result of the environmental issues outlined in Bronfenbrenner’s (1977) model.
Summary of the discussion.

In chapter seven, the three studies, both quantitative and qualitative, that made up this investigation were synthesized and discussed in relation to the research questions.

The null hypothesis was rejected in part. There were nine areas of significant difference between the high-ability and control groups in the quantitative study. These were in the area of home self-esteem, aspirations, and views of the parents and friends compared to subjects’ own perceptions. Study Three confirmed the findings of the quantitative study and added new dimensions to the investigation.

Home self-esteem was more positive for girls in the control group than is was for high-ability girls. Aspects of the home environment may have caused more negative perceptions of self-for the high-ability girls. For the girls in the control cohort the vocational views of their parents and friends were less different from their own. The high-ability young women may perceive a wider range of options available to them not always in agreement with their parents’ and friends’ expectations. The vocational aspirations in the area of expectations of further study and challenge were found to be significantly different between the highly-able and average girls. The high-ability young women had very high expectations of further study and finding a vocation that would stimulate them. This observation was supported in the qualitative study also. The question relating to the expectation of promotion was not statistically different between the groups. Both the high-ability and average young women were not as confident of gaining promotion in their chosen careers. Projecting too far into the future may be too difficult for many schoolgirls concerned with academic results, career indecision and uncertain employment opportunities.

This investigation has found that although the actual careers nominated by the girls were the same as their parents in only a few instances, the general occupational
categories identified in the ASCO document were similar to those of their parents. Both the high-ability young women and the average schoolgirls intimated more interest in careers classified as professional. Young women today are encouraged to pursue vocations that were not considered viable for many of their parents. Career aversion, that is an extreme unwillingness to take up their parent’s career direction did not present as an issue in this investigation. This finding was present in both the quantitative and qualitative studies.

Parents with high status careers were observed in relation to perceived level of interest in their daughters’ vocational decision-making. The literature proposes that well educated parents have been found to have high educational and vocational expectations for their children and that occupational level attained by the individual is determined by their parent’s socio-economic status. It would appear likely that parents with high status careers would display considerable interest in their offspring’s vocational trajectory. In this investigation, this premise held true for both the high-ability and control cohort. in both the quantitative and qualitative studies.

This investigation established that measured high self-esteem was not a predictor of high vocational aspirations for the highly-able cohort. The instrument used in this study was the Coopersmith SEI. The Coopersmith measures personal and social self esteem in the areas of home, school and the wider community. All these aspects are combined to give a total score. Although the number of girls with measured high self-esteem in the sample was considerably fewer than those in the control group, their vocational aspirations were statistically higher. This observation was present in both the quantitative and qualitative studies.

This investigation also observed no strong causal link between self-esteem and early vocational decision-making. High self-esteem did not predict early vocational choices. The high-ability group was less likely to make early vocational decisions than the control group who were able to make vocational decisions regardless of high or low measured self-esteem.
When the VPI vocational interest scores were examined, there was a strong relationship between vocational interest measured through the VPI and final career choice. It was expected that high scores in the Masculinity/Femininity scale would predict selection of non-traditional careers. This investigation found that the young women with high $M/F$ score did indeed select non-traditional vocations. However in the high-ability group, non-traditional career selection was not dependent on high Masculinity/Femininity scores. This observation was present in both the quantitative and qualitative studies.

Within the social domain, the variables of mother, father, teachers, friends and media role models were examined. In this investigation, the mother had marginally more influence than any of the other domains for the high-ability girls in Study One. In the qualitative studies however this perception modified as in retrospect fathers were viewed as being more important.

Although teachers were the first vocational advisors for both the high-ability and control cohorts, their vocational influence assumed less important to the young people as they progresses along the vocational path. There was no significant difference between young women in government or independent schools in the view that their teachers had limited influence on the vocational decision-making. In the qualitative studies the findings were mirrored. The atmosphere within the school was seen as being important however. Policies promoting equal opportunity and affirmative action within the community in general and the school in particular were identified in this investigation as broadening career options and, in turn, influencing vocational choice for young women.

The advice and interest of peers was not viewed as important by the high-ability group. The sample group in both the qualitative and quantities investigations appreciated that their friends took some interest in their vocational path they had very little influence on career choice. This perception did not change over the three years for the high-ability group in Study One. Friends however appeared to exert more influence on the average schoolgirl. In the qualitative studies friends had limited impact on the vocational decisions of the high-ability young women.
Media role models assumed little importance for either group in the quantitative study. In both the qualitative studies however, the highly-able girls were happy to identify female role models as being an influence in their lives. This influence was not recognized as assuming a great deal of influence over vocational decision-making however. The media was not identified as being overtly influential in the vocational decisions of the young women. It was apparent however that the majority of their role-models appeared in, or were promoted in, the media.

The constancy of vocational choice for the girls over the six years of the study indicates that although most of the highly-able girls had made vocational decisions in order to commence tertiary institutions, these were by no means stable. Triangulation of the data found several commonalities between the qualitative and quantitative studies in the matter of temporal change in career direction. Self-doubt, trying to please father, chance factors including illness, high aspirations affirmative action in schools and involvement in enrichment programs were common among the high-ability young women who changed vocational direction.

The young women in this investigation were unwilling or unable to select just one dimension of influence. However the concept of vocational interest was cited regularly as being an important, if not the most important, influencer of vocational choice. Vocational interest was shaped by the environmental experiences of the young women. Environment was represented within Bronfenbrenner’s (1997) model of the Microsystem, of the immediate environment represented by parents and family, the Mesosystem ,linking the school, home and workplace, the Exosystem, encompassing the school atmosphere, people in the work force, the beliefs and values within the wider community and the media. Together with the Macrosystem .which includes a core of general cultural, social and political values not always directly impacting on the adolescent. The social and biological environment of the high-ability girls were all viewed as influencing vocational choice.
Chapter Eight

Conclusion

The aim of the current study has been to focus attention on, examine and address the variables which influence the vocational decision-making and career choices of highly-able adolescent girls in Victoria. The social and educational factors, together with the internal dimensions of self-esteem, aspirations and interest have been investigated. Because the investigation spanned six years, the temporal aspects within the vocational decision-making trajectory have been taken into account. These identified dimensions of vocational decision-making have been considered with a view to developing a model of vocational choice.

A unique focus on the specific factors influencing vocational decision-making, suggested by the literature, has been addressed through three interrelated studies. The studies encompass both quantitative and qualitative data collection. Study Two is an extension of Study One. From these two studies has come confirmation of the literature and new material. Study Three is an explication of Studies One and Two. The qualitative investigations of Studies Two and Three were able to identify and address a critical time factor in the vocational trajectory. The investigation has been designed to examine, in a systematic way, as to whether the above variables are present. Secondly as to whether the variables are peculiar to high-ability young women or women in general and thirdly which, if any, of these identified variables is the most important.

These variables are encapsulated in the research questions around which the study was framed.-

- What is the relationship between parental occupations and daughters’ vocational choice?
- Does self-esteem influence vocational aspirations and early vocational decision-making?
• Does vocational interest measured on the VPI reflect final career choice?
• Is there a change in the relative influence of the variables over the three years?
• Which variable is perceived by the subjects as having the most influence?
• Was there a change in the stability of vocational direction over the six years?

Young people function in a highly complicated world. They need to find satisfaction, self-fulfillment and a sense of purpose. Adolescents have a need to understand themselves, feel in control of their lives and to be able to make decisions independently and set goals for the future. They have a need for intimacy and a desire to be accepted. Intellectually able young people have special adjustment concerns. They progress through the normal maturational stages of adolescence. However, their unique intellectual, social and emotional characteristics combine to complicate their development.

In broad terms the findings of the current investigation were found to be consistent with the major themes described in the academic and anecdotal literature. There were some unique aspects however that were not evident in this sample.

The qualitative investigation Study Two found that the vocational trajectory was not stable for the highly-able young women. Nine of the ten young women in this study changed their vocational direction in the post school years. The literature suggests that the career development of highly able females is complex and exhibits indecision. This does not appear to reflect issues of multi-potentiality in this investigation however. Within this study self-doubt, perceived parental pressure as well as chance factors all impacted on the high-ability young women causing them to change their vocational trajectories. Although four of the girls could be considered multi-talented, they did not attribute their change in vocational direction to having too many options. Indeed one multi-talented girl was an “early emerger”. She did not change career direction but followed a straightforward focussed vocational path.
High self-esteem was found not to be predictive of high vocational aspirations or the ability to make early career choices. On the basis of the data, vocational aspirations were found to be significantly different between the groups. Vocational aspirations within the sample were very high. The prospect of further study and expectations of vocational challenge were considerably more important for the high-ability girls. The measured self-esteem of the high-ability girls with high vocational aspirations was not high however. The strong vocational aspirations of the high-ability girls was not found to be a consequence of measured self-esteem. High self-esteem, measured on the Coopersmith SEI did not predict either high vocational aspiration or early career choice in the high-ability girls. It would be reasonable to conclude that high aspiration was perhaps a product of the equal opportunity policies in many Victorian schools at the time of the investigation. It could be attributed to the theory that, in choosing a vocation one is in effect choosing a means of implementing a self-concept (Super & Bohm, 1971; Hattie & Marsh, 1997; Herr & Cramer 1996). As such, the concept of self-esteem would be better depicted as one of self-efficacy.

There was a high degree of congruence between VPI interest scores and final vocational choice in the quantitative study for both the high-ability and average young women. This would suggest that the instrument was very appropriate and has strong predictive properties. It is noted that for high-ability girls, the counselling laboratories of the University of Iowa overseen by professor Nick Colangelo, and those of the University of Arizona, Tempe, by Professor Barbara Kerr do use the VPI in their protocol for helping young people to focus on their futures. Vocational interest measured through the VPI remained predictive of career choice in the two qualitative studies. High scores in the Masculinity/Femininity scale of the VPI is indicative of non-traditional vocational interests. However many of the intellectually able young women who did not have high M/F scores still selected non-traditional, male dominated occupations. Although high Masculinity/Femininity scores on the VPI were predictive of non-traditional occupational choice it was not exclusive. Many high-ability young women who did not have high M/F scores still selected male dominated occupations. Although both the sample and the control groups in this investigation did take up vocations in the same general ASCO category as many of their parents, many girls within the high-ability cohort selected generally male
dominated, non-traditional occupations. This finding was evident for the high-ability girls in both the quantitative and both qualitative studies.

Within the wider social domain, the variables of mother, father, teachers, friends and role models were examined. In the quantitative study mothers were seen as being slightly more important than fathers for the high-ability girls. In the qualitative studies (Two and Three) this perception was to change as the influence of the father, albeit both positive and negative was revealed as assuming more importance in the vocational trajectory of the high-ability young women.

Careers teachers were primary vocational advisors for both the high-ability and average young women in all three studies. Careers teachers were not seen as being at all influential in vocational decision-making however in either the quantitative or qualitative study (Two). In Study Three teachers assumed more importance for the high-ability girls. These young women were in a school with a dedicated acceleration program for intellectually able girls. It would be reasonable to assume that their career teacher had more interest and perhaps more expertise in advising able young women of their vocational options. This can be an issue of appropriate training or careful choice of a career teacher to guide highly-able young women.

The advice and influence of friends was not seen as impacting on the vocational choices high-ability young women in either the quantitative or qualitative studies. Friends were viewed as more important by the average young women in the quantitative study. It is well documented that the peers of intellectually able young people are able to affirm and support one another. When vocational influence was addressed peer validation was not evident. This feature also extended to the selected cohort in the dedicated program (Study Three).

Role models were not viewed as an important variable in the quantitative study for either the high-ability or control groups. In the qualitative studies however the high-ability young women did attribute some significance to the influence of role models in their lives. This influence did not impact on their vocational trajectory.
However. Only two young women in Study Two, on reflection, attributed their change in vocational direction to the contribution of role-models. Mentors were not evident in either the quantitative or qualitative studies.

The young women in all three studies were unwilling or unable to nominate just one primary dimension of influence. Parents, people in professions, work prospects, status and income were all nominated as being important. The concept of interest was cited by many of the high-ability young women in both the quantitative and qualitative studies.

The findings of this study pointed to interest as being a fundamental dimension of vocational choice and interest was expressed in numerous ways. Interests can be viewed as a preference for, or a liking and enjoyment of, specific activities. This study poses the problem of a workable understanding of the construct of interest. An extension of this question is a need to understand what comprises interest for the high-ability young woman.

"me, knowing what I want and what I am interested in, knowing what I want from a career. Seeing billboards and thinking I'd like to be a part of that. I like the idea of power dressing" Case Study No.24.

Interests might in some sense be regarded as expressions of what we want and that interest themes are important for explaining educational choices. The results of the qualitative studies indicate that interest, as a construct, is shaped by the environment. Parents, through encouragement and discouragement may facilitate in the young women’s vocational preference. The atmosphere of the school by promoting equal opportunity and affirmative action policies encourage the high-ability young women to broaden their vocational horizons and gain an awareness of careers that they may not have considered at one time. The print and electronic media fosters interest by exposing young women to female role models. Indeed these role models may be few or even inappropriate but they have an important influence in shaping interest. For the high-ability young woman, interest, together with attainment or “doing well” nourishes aspiration. These dimensions in turn initiate career choice.
Together with aspiration, interest is an integral part of occupational choice. The environment through the influence of the family, school and wider community shapes interest. Interest together with career self-efficacy rather than self-esteem and general ability lead to a model of vocational choice.

The proposed model of vocational choice is informed by the findings of the current study. It is grounded in the theories of Bronfenbrenner (1977/1986), Tannenbaum (1983/1997) and Walberg & Zeiser (1997).

Bronfenbrenner’s model of ecological systems is conceptualized into four external systems. These consist of the Microsystem or the immediate physical environment of the individual comprising home and family, school and friends, the Mesosystem incorporating overlapping and interacting Microsystems such as school and home, home school and workplace, the Exosystem, which is made up the parent’s workplace and social network as well as the wider community, and the Macrosystem in which wider social values systems such as the government, religion and the media are encompassed. These in turn affect school entry, adolescence, entering the workforce, marriage and death. These systems enable the influence of the environment on important family processes to be observed. As such, the model contributes to an understanding of the socio-cultural environment of the development of the individual. The socializing agents within the four systems, parents, teachers, school atmosphere, friends, media, self-efficacy as well as social values interact to influence the young person’s subject choice and ultimate vocation. The degree of influence exerted on the adolescent by each of the variables is disparate.

The environment is a vital component of the predictive variables of fulfilment and promise which interact to influence talent development. No single element accounts for high accomplishment. The combination and interaction of such components is reflected in the work of Tannenbaum (1997), Walber and Herbig (1991) and Walberg and Zeiser (1997). The model of potential development proposed by Tannenbaum views the environment as being extremely important. The environmental influences within the home, school and the wider community, together with general ability, special abilities, drive and motivation affect a young person’s
potential and ultimate vocational possibilities. Walberg and Zeiser (1997) in their model of fulfillment, also identify the importance of the environment found in the home, school, peer group and exposure to mass media, together with ability, motivation and self-concept (self-efficacy perseverance on tasks). Walberg and Zeiser also proposed that the quality and amount of instruction at school was important.

The pictorial representation of these ideas is as follows-

Figure 8.2 A model of vocational choice

It is evident that this model incorporates an element of time. The effect of time, like the construct of interest proved to be allusive in an investigation of this type. The Kerr (1991), Tomlinson-Keasey et al. (1990), and Wilson (1994) investigations are based on quite extended lapses in time. Similarly there is a temporal aspect to this study. Compared to the studies of Kerr it comprises a relatively diminutive time factor spanning six years. On the basis of this investigation retrospective memories or self-reporting was not always reliable. Self-reporting over time or the reliability of memories far distant may be open to discussion.
The identification of the subjects in the sample was a limitation within the quantitative study within this investigation. At the time it was not Victorian Education Department policy to administer tests of ability to their students. Indeed such measurement was actively opposed. Identification of ability for the subjects in government schools was generated by teacher nomination on the basis of high academic results. However the girls from non-government, independent schools were formally identified as being highly-able on standardized tests of attainment and/or measures of general ability. All of the young women in both of the quantitative studies were formally identified as being highly-able on standardized tests of general ability.

In view of the fact that a number of high-ability young women in this investigation experienced vocation indecision and change in direction over time, further investigation on the aspect of time in vocational choice of high-ability girls would be advisable. In Victorian schools, vocational guidance is not an issue until the last two years of schooling. It has been documented however that high-ability young people can make vocational choices at a much earlier age. A study which observes young women who have been exposed to early vocational counselling from Grade eight, together with a career teacher who is trained in the needs of high-ability young women as they progress along their vocational trajectories would be important.
Appendix A

Decision-making Questionnaire (DMQ) #1

Name:---------------------------------------------------------------
Address:---------------------------------------------------------------
Year Level:-------------------------------------------------------------

How would you define career?---------------------------------------------
How would you define a job?-----------------------------------------------

What is your mother's job/career?----------------------------------------
What is your father’s job/career?-----------------------------------------

Where was your mother born?---------------------------------------------
Where was your father born?---------------------------------------------

1) Have you decided upon a career?---------------------------------------
2) If so (or not) to whom would you go for advice?------------------------
Please answer the following questions using the following code from 1-5.

1 having little importance and 5 having the most importance.

3) I will do further study when I leave school. 1-2-3-4-5
4) I expect my career to be stimulating. 1-2-3-4-5
5) I expect my career/job to offer prospects of advancement. 1-2-3-4-5

How much interest has been taken in your career decisions by
6) Your mother? 1-2-3-4-5
7) Your father? 1-2-3-4-5
8) Your teachers? 1-2-3-4-5
9) Your friends? 1-2-3-4-5

How would you rate the level of influence on your career decision-making by
10) Your mother? 1-2-3-4-5
11) Your father? 1-2-3-4-5
12) Your teachers? 1-2-3-4-5
13) Your friends? 1-2-3-4-5

Have there been suggestions of particular career options by
14) Your mother? 1-2-3-4-5
15) Your father? 1-2-3-4-5
16) Your teachers? 1-2-3-4-5
17) Your friends? 1-2-3-4-5
18) How much influence have female role-models in the media had on your career decisions? 1-2-3-4-5
19) What career/job have you decided upon?-------------------------------------------

How different is this from the view of
20) Mother? 1-2-3-4-5
21) Father? 1-2-3-4-5
22) Teachers? 1-2-3-4-5
23) Friends? 1-2-3-4-5

24) What or who else has influenced your career decision?-----------------------------

25) How?-----------------------------------------------------------------------------------------

26) One career I really wouldn’t take up is  ------------------------------------------27) Why?------------------
-----------------------------------------------
Appendix A

Decision-making Questionnaire (DMQ) #2

Name:---------------------------------------------------------------------------------------

Address:------------------------------------------------------------------------------------

Year Level:----------------------------------------------------------------------------------

How would you define career?---------------------------------------------------------------

How would you define a job?-------------------------------------------------------------------

What is your mother’s job/career?----------------------------------------------------------

What is your father’s job/career?-----------------------------------------------------------

Where was your mother born?------------------------------------------------------------------

Where was your father born?------------------------------------------------------------------

1) Have you decided upon a career?----------------------------------------------------------

2) If so (or not) to whom would you go for advice?------------------------------------------

------------------------------------------------------------------------------------------
Please answer the following questions using the following code from 1-5.

1 having little importance and 5 having the most importance.

3) I will do further study when I leave school.  1-2-3-4-5

4) I expect my career to be stimulating.  1-2-3-4-5

5) I expect my career/job to offer prospects of advancement.  1-2-3-4-5

How much interest has been taken in your career decisions by
6) Your mother?  1-2-3-4-5
7) Your father?  1-2-3-4-5
8) Your teachers?  1-2-3-4-5
9) Your friends?  1-2-3-4-5

How would you rate the level of influence on your career decision-making by
10) Your mother?  1-2-3-4-5
11) Your father?  1-2-3-4-5
12) Your teachers?  1-2-3-4-5
13) Your friends?  1-2-3-4-5

Have there been suggestions of particular career options by
14) Your mother?  1-2-3-4-5
15) Your father?  1-2-3-4-5
16) Your teachers?  1-2-3-4-5
17) Your friends?  1-2-3-4-5

18) How much influence have female role-models in the media had on your career decisions?  1-2-3-4-5

Entertainment industry?  1-2-3-4-5
Educators?  1-2-3-4-5
Visitors from industry?  1-2-3-4-5
Famous women?  1-2-3-4-5
Eminent leaders?  1-2-3-4-5

19) What career/job have you decided upon?-------------------------------------------

How different is this from the view of
20) Mother?  1-2-3-4-5
21) Father?  1-2-3-4-5
22) Teachers?  1-2-3-4-5
23) Friends?  1-2-3-4-5

24) What or who do you believe has had the most influence on your career decisions?----
25) Is there a female figure you greatly admire?----------------------------------------------
----
26) If yes who is it?---------------------------------------------------------------------------
----
27) What or who else has influenced your career decisions? -------------------------------------
----
25) How?-----------------------------------------------------------------------------------------
-----
26) One career I really wouldn’t take up is -----------------------------------------
-----
27) Why?-----------------------------------------------------------------------------------------
-----
Appendix A

Semi-structured interview with students from the first study

1 What is your current profession/career?
2 Do you recall the career you decided upon in the original study?
3 If it is not the same as your original choice why did you change?
4 Who do you believe influenced your decision to change careers?
5 In retrospect who or what most influenced your decision-making?
6 Can you recall the progress of your decision-making?
7 When did you make your final decision?
8 Did the atmosphere in the school contribute to a sense of vocation?
9 Did your school have affirmative action policies?
10 How influential were those policies in influencing your career decision-making?
11 Did you have a role model?

Any other comments that you would like to make?
Appendix B

Tables
Appendix C

Case Studies – Study Two

The case studies will be reported following the order in which they were received by the author.

Pre-tertiary influence on vocational decision-making.

JC/1

J has a New Zealand born mother who is a nurse. Her Australian father is a general practitioner. J was identified as highly-able in primary (elementary) school and was involved in enrichment programs until year 9. J defined “career” as “something you intend to succeed at and feel satisfied doing”. Her responses to the questions on the DMQ relating to vocational aspiration however were ambivalent. She answered “very important” to the question “I will do further study when I leave school”. J’s responses to the two questions relating to expected stimulation and advancement during her career were unenthusiastic, being considered neither “important” or “unimportant”. J believed that her mother took more interest in her vocation decision-making and made more suggestions than her father, teachers or friends. Role models were of “little importance” Even though she nominated her teachers as being the people to whom she would go for advice, her brothers and sisters were the only people J believed influenced her vocational decision-making in any way. This perception was not to change over the three years of study one. In the first year of study one J was undecided on her ultimate vocation, but by the second year of the study Grade 12 for J) she had decided to become a natural scientist. This vocational choice was commensurate with her highest score on the Holland VPI. This score was categorized as Investigative. Because the literature identified self-esteem as being an important dimension of vocational decision-making, it was noted that J had low self esteem as measured by the Coopersmith SEI. The vocation that J nominated as being the one she was least likely to embrace was “anything medical” because “I don’t want to be like my parents in a few years”
NK/2

N has an Australian born mother who is a retired teacher currently an artist. Her father, a teacher, was born in Holland. N was identified in primary school as highly-able and was involved in enrichment programs until grade 8. N defined “career” as “an occupation which you do in order to earn a living and get satisfaction”. Her response to all three questions relating to aspiration were “most important”. N believed her mother took the most interest in her vocational decision-making. Her father and friends did make important suggestions as to career options also. N did not believe however that her parents, teachers or friends influenced her vocational trajectory at all. N had medium to good self-esteem as measured by the Coopersmith and had made a career decision in the first year of the study. N has decided that Journalism was to be vocational choice. She believed that the variable that influenced her most was interest, “what I really enjoy and am good at”. N’s highest VPI category was Artistic, was commensurate with her vocational choice of Journalism. The career N nominated as one she really would hate was “accounting” as “I hate numbers and any work which doesn’t need imagination”.

MF/3

Both M’s parents were born in England. Her mother, a former nurse, manages a community based project for disabled people. M’s father is a horticulturist. M was identified as highly-able when at primary school. During which time she was involved in enrichment activities. In Year 9 she was selected to take part in a university program for gifted children. M defined career as “a field in which your interests are displayed”. M’s responses to the DMQ questions relating to vocational aspiration were all in the “most important” category. Initially M believed that although both parents and friends took considerable interest in her vocational decision-making she did not believe they had any influence on her choice. M had made a decision in the first year of the study. Her self esteem measured on the Coopersmith was high. M’s chosen vocation was Sport promotions and management. This vocational choice was commensurate with M’s highest score on the VPI Enterprising. M chose her career because of her interest in, and enjoyment of, sport
and communicating with people in that profession. M noted that although she would seek advice from career teachers and her parents, “interest was the most important importance influence”. She nominated nursing as the career she would be least likely to choose because she had no interest in it. These views did not vary over the next two years of the study. The career that M really did not want to take up was nursing “because I have no interest in it”.

FB/4

F’s Australian mother is a lawyer. Her father, an orthopaedic surgeon was born in England. F was identified as highly-able in primary school and was involved in enrichment activities during her primary years. She defined career as “job that you would like to get and that you would work towards”. She responded “most important” to the DMQ questions relating to aspiration. F believed that her father and teachers took “a great deal” of interest in her vocational decisions. Her mother and teachers only “some interest”. F also believed that it was her father and teachers who influenced her most during her vocational trajectory. She also nominated work experience as being important, not only because she was made aware of attractive career options, but she also formed aversions to others.

F had decided on a vocation in the first year of the study. She had high self esteem as measured by the Coopersmith. F’s highest VPI score was categorized as Investigative. She nominated medical science as her vocational choice. This choice was commensurate with F’s highest VPI score. F did not want to become a mechanic because “I like to work with my head not my hands”.

RG/5

R’s father, a general practitioner, was born in Wales. Her mother is an indigenous Australian homemaker. R was identified as highly-able in primary school and was involved in enrichment programs up until grade 9 when she changed schools. R defined career as “what you decide to do or become”. The questions on the DMQ relating to vocational aspirations were responded to as “most important”.

In the first year of the study, R noted that she would seek vocational advice from a careers teacher. She believed that her parents and teachers were interested in her
vocational decision-making. R believed however that her parents, teachers, friends and role models had “no influence whatsoever in her decisions regarding career choice. R’s self-esteem, measured by the Coopersmith, was “medium”. In the first year of the study, R nominated “medicine” as her desired vocation. Teaching was the career she was least likely to pursue. R’s highest score on the VPI was the category of Enterprising. This was not commensurate with her initial choice of medicine. The one career that R would never take up is teaching ‘because I don’t think I’d like it’.

CA/6

C’s Australian mother is a homemaker. Her father, also Australian born, is a plumber. C was identified as being highly-able in primary school and was involved in enrichment programs until Year 6. C defined a career as “something that earns a substantial amount of income as well as being something you enjoy”. The questions on the DMQ pertaining to vocational aspiration “I will do further study when I leave school” was considered by C to be “most important”, as was “I expect my career to offer prospects of advancement”. C responded “very important’ to the question “I expect my career to be stimulating”. She nominated teachers as being initial advisers. C believed that her mother took “very little” interest in her vocational decision-making and her father, teachers and friend “some”. She believed the influence of her parents was of “little importance”. Her teachers and friends had marginally more influence, “some”. Role models in the media were of no importance at all. C’s self-esteem was measured as “medium” on the Coopersmith and in the first year of the study she had decided upon a career in the commerce/law field. By the second year of the study however she nominated “finance manager”. This career choice was “very different” from the views of her parents. She believed that the greatest influence on her vocational decision-making was herself and her interests. The career that she nominated that she would be least likely to pursue was teaching because “I just couldn’t handle it”. Her highest RIASEC score was on the Enterprising scale which was commensurate with her vocational choice. Even though she chose a non-traditional vocation her T-score on the Masculine/feminine scale was not high. Teaching was her career aversion because “I couldn’t handle it”.

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T’s Australian mother is a teacher. Her Swedish father is an artist. T was not formally identified as highly-able at school. She did however win an academic scholarship to the secondary school where she was invited to attend a university initiated program for gifted students in Year 9. T defined a career as “an area in which you are working that has a specific interest for you”. She nominated parents, teachers and friends as to whom she would go for advice. She nominated “most important” all questions pertaining to vocational aspiration. T believed that she would become a lawyer or a journalist. She believed that her mother took “a great deal” of interest in her vocational decisions by her father, teachers and friends only “some”. She believed that her parents, teachers and friends had “very little” influence on her vocational trajectory. She nominated “interest” and Status as being the most important influencers. T’s highest RIASEC score was Artistic. She had medium self-esteem as measured by the Coopersmith. Her T-score on the M/F scale was very low. Because T specifically mentioned Status in her definition it was of interest to observe that she did indeed have a high T-score on the Status scale in the VPI. Tiffany wrote that she would “wouldn’t do anything at all like accounting” because it was “boring”.

A’s mother was born in Germany. She teaches languages in a high school. A’s Australian born father manages a University student hostel. Although A was not formally identified as highly-able she was a scholarship winner. She defined career as “a line of work you make a living from”. She believed further study after school and stimulation in her chosen career to be “most important”. However, A nominated “some” as to whether she expected her career to offer prospects of advancement. A did not believe that her parents, teachers or friends had much interest in her vocational choices. She did believe that her mother and father had “some” influence on her vocational decisions. Only her father had made suggestion regarding her choices. She nominated “people in the field” as initial vocational advisors. A had a very high T-score on the Masculine/feminine scale. Her highest score on the VPI was Investigative. Her self-esteem score was also very high. She nominated “medicine” as
a final career choice in the first year of the study. Ai nominated office worker as something she would never do. “I don’t want to sit at a desk all day long”.

**FN/9**

F has Australian born parents. Her mother is a computer operator and her father a lawyer. F was identified as highly-able in primary school and took part in enrichment programs until grade 6. She defined career as “the way in which you spend your life after formal education”. In the first year of the study F was undecided about her vocational ambitions. She nominated medicine, law or marketing as possible careers. F noted that she would seek vocational advice from teachers and/or career advisors. The questions on the DMQ relating to career advancement and aspirations were all answered “most important”. F believed that her mother, father and teachers took “a fair amount” of interest in her vocational choices, but the only people who influenced her were her teaches “a fair amount”. She noted that she was also influenced by university open days and people in the professions. F nominated anything not scientific as being the least likely career option. F has only medium self-esteem as measured by the Coopersmith. Her highest RIASEC score was **Enterprising**. This was commensurate with her final career choice of law. F said that she would not do anything scientific because “It is too boring and hard”.

**KW/10**

K’s Australian mother is an interior decorator. Her father is the owner/director of a large ceramic tiling firm. K was never formally identified as being highly-able. However she is included in this study because she was an exceptionally high achiever gaining high scores in all areas of the curriculum. K defined career as “something you do for a living and for an income”. She nominated teacher, parents, friends and people on the job, in that order, as to the advisors she would initially seek out. She also nominated work experience and “wanting to help people” as being important influencers. K answered “most important” to all the questions relating to vocational aspiration. K did not believe her parents took very much interest in her career decision-making at all. She believed that her parents, teachers and friends had “very little” influence on her vocational trajectory. K’s highest RIASEC score was in the
Enterprising category. Even though her T-score on the masculine/feminine scale was very low she nominated a non-traditional career. Her self-esteem score was medium and her final career choice, made in the second year of the study was medicine. K reported that being a secretary was something she wouldn’t wish to be because “it would be boring sitting in an office all day”.

Three years post study one.

JC/1

When J sat for the Victorian Certificate of Education (VCE) she did not believe that she would obtain the high ranking score necessary to study science at University. She had suffered from Chronic Fatigue Syndrome in Year 10. The illness as well as a negative feeling toward her father at the time, she believed accounted for the extremely low self-esteem score on the Coopersmith. Due to this she lost confidence in her academic ability. She did not attribute her lack of decision-making to poor self esteem however, rather an inability to make up her mind. She joined a mortgage operation with a bank and did data processing. J then applied successfully to the University to commence a Bachelor of Science degree. She obtained good marks and is now completing a post-graduate degree in reproductive science. In retrospect, J believes that her mother influenced her decision to change from natural sciences to reproductive science. J’s mother who works in an IVF clinic took J to work with her during her field work at University where she met many interesting people in the field of reproductive science. This visit fostered as deep interest in the area. Prior to her illness in Grade 10, J believed that her school’s affirmative action policies contributed to her sense of vocation. At that time the school had an atmosphere of affirmation and “even though I was depressed in Grade 10, there were never any limitations to my career aspiration”. In Grade 11 J attended another school without affirmative action policies.

NK/2

N did not win a place in journalism at the University. She did however complete a degree in social science. It is of interest to note that her nominated career aversion was accounting, but she is currently a customs officer working in data
collection. N believes her change in career was not a conscious decision but “it just happened because of the elimination of options”. She has no intention of remaining a customs officer forever. In retrospect, N believes that her initial career choice of journalism was influenced by her parents, especially her mother who went to interviews with her. Her teachers encouraged her writing “because I was good at it” and her interest in journalism because “I really enjoy what I’m good at”. “In terms of career I’ve never wanted to ‘be’ anything. I’m still not sure what I want to ‘be’. I still was to do some writing and further myself creatively, but at the moment I have virtually no career direction”. N believes that she was given little direction in schools and does not remember affirmative action policies.

MF/3

M’s initial vocational choice was “sports promotions and management. This career was commensurate with her high score on the Holland category Enterprising. Three year later M completed a graduate degree in commerce. She is now completing a Bachelor’s degree in primary and secondary teaching. M believes that her change in vocational was due to her parents, especially her mother, telling her there was a demand for teachers and that teaching was a “wise option” and that she would be more likely to gain employment. M does not imagine that teaching will be long term option for her as she still has ambitions to be to be a management consultant. In retrospect she believes that a grade 9 involvement in a university commerce program for gifted children fostered her interest in commerce and management. M believed that although her school did support her aspirations through an active equal opportunity policy and promotion of equal opportunity “there was always the expectation to be the best you could be”. In retrospect M believes her mother, along with her own interests, were the most important influences along her vocational decision-making trajectory.

FB/4

F’s initial career choice was medical science. She is now completing a degree in medicine (MBBS) and intends to become a doctor. F’s appreciated during her first year of study that she found interacting with people far more interesting than
research. She attributes her change of preference to a vacation job where she did ward rounds with her father. “My father strongly encouraged me in that area”. “I realized I wanted to work with people healing them like my father”. In retrospect, F believes she always wanted to do “something in medicine” but she did not want to have the late hours her father had. In Grade nine, F attended a university program for gifted children studying forensic science. She enjoyed it but realized she would be dealing with dead bodies so “I went back to medicine and clinical work”. F’s early years of secondary schooling were at a girl’s college. She believed the school fostered a feeling of “girls can do anything” and she was encouraged to “be the best she could be. We were encouraged to take on whatever we wanted”. In her final two years of high school, spent at a co-educational school, she was the only female completing a straight maths/science course.

RG/5

Although R’s initial vocational choice was medicine, she is now a trained manager for a large company. In hindsight R believes the career choice of medicine was made only to “please my father”. She commenced study in the area of business tourism at university but changed to science after one year. R then deferred her course and went to Queensland to be with a male friend. “I didn’t enjoy it at all so I quit and went to Queensland”. She applied for, and was accepted for a position in a large stationery company. She enjoyed the work and was invited to undertake management training. Her current position as manager of a large business is commensurate with her high Enterprising score on the VPI. Towards the end of high school, R suffered from Rheumatic fever. Her grades suffered and “for the first time in my life I had to study” R’s career path was not straight-forward. R noted that she felt that she was guilty of “wasting” her parents’ money. In retrospect R believes that she was trying to please her parents by studying medicine. In the first year of the study, she believed that she was not influenced by her parents at all. Three years after the completion of the first study, R “took responsibility for my own decisions. The greatest influence was myself- I guess”. I became very interested in office management”. R was initially reluctant to do the semi-structured interview. She believed that the other girls in the
study would all have “great professional careers”. When assured that other participants had made vocational changes she was happy to be included in the study.

CA/6

By the second, year of study one C had decided to become a finance manager. She was admitted to university where she gained a Commerce degree. She also completed a Bachelor of Public Policy degree with honours. She is now part of a change management team with a large organization implementing new internal systems. C changed career paths from wanting to work in a finance environment because she disliked the methodical feel that the finance industry had. She wanted something more subjective and interesting to work with. This change in career is cognizant with her highest RIASEC score Enterprising. In retrospect C believes that her major career choice influencers were her peers and successful business women. She likes to read about successful Australian women who have started businesses as well as women in politics. C believes that the atmosphere of her school did encourage her to set high standards. Her school had equal opportunity policies and fostered self-esteem and promoted successful women. Her school friends all had high achieving professional families and so she wanted to attain to the highest academic levels that she could without taking away from a social life as well.

TK/7

Although T’s final career choice on the questionnaire was law, she had expected to become a journalist all through high school. T was accepted into university to study arts majoring in journalism. She studied policy research and analysis in her third year at university because she believed it was more practical and she put “romantic notions of being a writer into perspective”. In hindsight T believes her first school, a girls’ school, did have affirmative action policies because her final year of schooling was at a co-educational school where “girls were expected to act in a very different way”. T believes that “interest “was the most important factor influencing her vocational choice.

AR/8
A is currently studying for a degree in science, majoring in anatomical science. This choice is commensurate with her high VPI interest of Investigative careers. She is taking a psychology minor also because “I’m interested”. She plans to enter the post graduate medical course next year. A believed that although both her parents were very encouraging, in retrospect A believes it was her mother influenced her career choice considerably. She believes that she did lack confidence in her decisions. She doubted her choices when a teacher told her that she “wasn’t suited to becoming as doctor”. Because A was unsure as to whether medicine was the right choice, she initially undertook a science degree. She studied only the subjects in which she was interested and enjoyed. She still has doubts as to whether she is clever enough. “The main doubt came from myself, as to whether I was actually smart enough. I suppose I gradually became more confident when my results were fairly consistent and of a fairly high standard”. She believes that in general the school did contribute to a sense of vocation, and the atmosphere of the school as a whole established a degree of confidence as the school “encouraged us to pursue a university education and professional careers-to be what we can be”. The school did have a philosophy of “empowering young women”. The interest she had in her coursework and the enjoyment of her first year of tertiary study enabled her to feel confident enough to continue in her chosen field although she still has doubts about her intellectual ability.

FN/9

F is completing medicine at university. She applied to study science/law because she did not expect to get high enough scores in the Victorian Certificate of Education (year 12) to study medicine. “I was too afraid I wouldn’t get in”. In retrospect she believes that she only chose law to please her father. F contracted glandular fever in year 11 and missed a considerable amount of school. She did well in her first year of science/law and changed to medicine in her second year. In hindsight, F believes her greatest vocational influence was a soap opera on television featuring a country doctor. She believes the life of the country doctor interested and fascinated her. In the original questionnaire in study one however she noted that role models in the media were of “no importance at all”. She later did work experience with two female doctors and looked upon them as role models. F believes that her
first secondary school had positive affirmative action policies which encouraged ambition. The girls at her second high school, a co-education college were “less ambitious”.

KW/10

K is currently studying speech pathology. Her original choice was “medical practitioner”. In the original survey K answered that her parents had “very little” influence on her career decision-making. However in hindsight, K now admits that the extremely negative influence of her father has caused her career indecision. K believes that his constant questioning “you are going to be a doctor aren’t you?” turned her away from medicine. At the time “He had a huge influence on me and I felt very pressured”. She did not want to set herself up for failure, “because medicine is very hard to get into”, so she chose another career path for herself. “I decided to venture down a path at the opposite end of the spectrum”. “I wanted to become a hot-shot business woman”. She studied commerce/science. When she found that she wasn’t interested in the course “I didn’t have a passion for this area” she went “career shopping’. A chance meeting in a pub with a speech pathologist encouraged her to change careers. K noted that the career surveys held at school always pointed to her undertaking a vocation in the health sciences. Because she believed the surveys to be a farce and as medicine was the pinnacle she ignored them”. I always pushed myself and saw medicine as the pinnacle”. In retrospect K believes she could have saved herself much time and money of she had recognized that she was more suited to the health/sciences. “Had I listened to Ms B, I would have chosen a career in the health sciences when first left school”. “It is so important to empower school children with an abundance of knowledge about what is available to us”. K envisages herself as having a home clinic one day where she can be home for her children. This would complement the high Enterprising score on the VPI. In retrospect “I should have listened to the career advisor after all”.

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M K/11

M’s mother is a structural engineer, her father an electrical engineer. Both parents were born in Serbia. M defined career as “something which challenges me everyday, something I love and am interested in”. She high aspirations and answered “most important” to all questions on the DMQ relating to further study, stimulation and advancement. She rated the level of interest of her mother as “very important” and her father, “some importance”. Her teachers and friends she perceived as having little or no interest. M nominated people in the job and her mother as her vocational advisors. M believed her mother’s influence was “very important, her father, teachers and friends were not at all important. M stated that her father and teachers had made vocational suggestions. She nominated role models from industry and famous women and being “very important” Eminent leaders were “most important”. She nominated several females she admired, “very high role business women who are in charge of giant corporations”. Her career choice, of civil engineer, was not at all different to that of her mother. When asked to nominate who or what had the most influence on her career decision-making, M nominated “women with important roles really interest and inspire me”. M noted that her European background enabled her to see old structures and buildings and ever since she has wanted to design and build structures. She believes “that meeting professionals and seeing the power and respect they get for working so hard” influenced her. M had a high self-esteem score. Her highest VPI (interest) category was Realistic.
EW/12

E’s mother is Australian and her father English. Both parents are musicians and E wishes to be a musician or “something in the music industry” also. E defined career as “a job in the industry you are interested in”. She did not believe that study after school or advancement was at all important. However she answered “most important” to whether she expected her career to be stimulating. E said that she would seek vocational advice from friends in the music industry. E believed that her mother and father interest in her vocational choice was “most important”. Her friends “very important” She did not believe her teachers were at all interested. She rated her father’s influence as being “most important”. Her mother, teachers and friends had “some” or “very little” impact however. E did not believe that female role models were important at all. E believes her interest in, and love of performing had the most influence on her vocational choice. She believes the opportunities she received through her involvement in the media gave her inspiration. E’s self-esteem score was medium and her highest VPI interest category was Artistic.

BS/13

B’s mother is an Australian research consultant. Her father is a university lecturer. B defined career as “the path you chose for employment”. B has high aspirations. She answered ‘most important” to all questions relating to aspiration on the DMT. She believed her mother and father took “a great deal” of interest in her vocational decision-making. Her teachers and friends were less interested. B rated “some” influence for her parents and teachers. Her friends had no influence at all. Role models were of importance to B. She nominated eminent leaders as being “most important’, educators, people from industry and famous women as “very important” role models. She is studying political science so she can “change the world”. B believes that her social studies teacher had the greatest influence over her vocational choice “because she got me interested”. She then added “probably my mum, she supported me in what I’m interested in”. B has very high self-esteem. Her highest VPI interest category was Realistic.
Ns Australian parents are managing directors. She defined career as “a long term thing – a number of jobs in the one area”. She is studying computer science. She nominated her parents and teachers as the people to whom she would go for advice. She believed her mother’s interest in her vocational decisions was “very important” her father ‘most important”. The interest of teachers and friends was of “very little importance”. She believes that her parents and friends had “a fair amount” of influence on her vocational decision-making. She believed her role models were famous women. The Olympic skier, Zaly Stegal, was the one woman she greatly admired. N noted that her father, (“my dad wants me to go into an important, well paid profession”) had the most influence on her career. She believed work experience helped her make a career decision. Ns self-esteem was medium. Her highest VP interest category was investigative. Her vocational aspirations were strong.

CS/15

C’s mother is a psychologist. Her father is a chaplain and computer programmer. She defined career as “something you do because it interests you”. S stated that she would seek advice from “the universities that offer the course that you are interested in”. She believed that further study after school and a stimulating career was “most important”. Prospects of advancement was “very important” to C. She rated the level of interest of her mother, father, teachers and friends as “very little”. The level of influence of her parents was “some” her teachers and friends “very little”. Her mothers vocational suggestions were “very important” her father and friends “some” and teachers “very little”. Role models held “very little” importance for C and she did not have a female figure she greatly admired. C believes that she had the most influence over her vocational decisions. “Me because I love to draw and design-I don’t care what others want or expect me to do”. She is studying graphic design. C believes that her mother’s encouragement “a little” helped. C has very high self-esteem. Her highest VPI interest score was Artistic.
WW/16

W has Hong Kong Chinese parents. Her mother is a housewife and her father a university lecturer. W defined career as “career is a broader sense of a job- more like a whole general occupation”. W believed that further study, expectations of stimulation and advancement were “very important”. W would seek vocational advice from her parents and her teachers. She believed that her mother and father and friends took “a great deal” of interest in her vocational decision-making. Her teachers “some” interest. W believed that both her mother and her father influenced her vocational choice “a great deal”. Her friends and teachers had only “some” influence. W nominated role models in the entertainment industry as being “most important”. She believed that famous women and eminent leaders were “very important”. After herself, she nominated her mother, father and sister as having the most influence on her vocational path. W nominated computer scientist as her preferred occupation. Ws self-esteem was high. Her highest VPI interest category was investigative.

RC/17

R’s parents are English. Her mother is a librarian and her father a scientist. She defined career as “what you do with your life”. She believed further study, stimulation and prospects of advancement were “most important”. She rated the level of interest of her parents, teachers and friends as “very little”. She nominated her agent as the person to whom she would seek advice. She rated the level of influence of the variables as “very little”. She believed that her career choice was “very different’ from the expectations of her teachers and friends. Role models were of “very little” importance except for visitors from industry who were of “some’ importance. She had decided upon a career in media production. R believed that her own interest fostered through the editing facilities at school. She believed that her involvement with the screen-actors studio in her regional city her main vocational influence. R had low self esteem. R had a very flat, low interest VPI profile. No category could be measured as being high. It would be expected that her self-control score would be high, however it was very low also.
MR/18

M’s mother, a teacher was born in Malaysia. Her father is an Australian born farmer and stock agent. M defined career as ‘the thing that you’ve worked hard at getting. Something that interests you and you want to do’. M believe that further study, vocational stimulation and advancement were “most important”. She nominated her god mother as the person to whom she would go for vocational advice. She believed her Godmother and her mother had the most influence on her career decisions. M rated the level of interest of her mother as “very important”. Her father, teachers and friends had no interest in her career choices. M rated her mother’s level of influence “most important”. The other three variables had “very little” influence on her vocational path. Her mother’s career suggestions were the only ones of any importance at all. They were “very important”. M nominated role models comprising famous women and eminent leaders as of “some” importance. M is studying human biology. Her self-esteem was medium. M highest VPI interest category was Investigative.

CG/19

Cs mother is a nurse and her father a clerk. She nominated career as “a pathway after school”. Her answers to the questions relating to aspiration were somewhat ambiguous. She believed that study after school was of “some’ importance and a stimulating career of “little” importance. Her expectations of advancement were “very important” however. C responded “no-one’ when asked to whom she would seek advice. She believed that her own interests had had the most influence on her vocational choice. She believed her mother was “very interested” in her vocational decisions. Her friends had “some” degree of interest but her father and teachers “very little”. The influence of each the variables appeared to be of similar significance. She did not believe role models were of any importance. She did, however nominate an actor, Kylie Minogue, as a female figure that she admired. C self-esteem was high. Her highest VPI interest category was Enterprising. C is planning a career in advertising and is studying sales and marketing.
KW/20

K’s mother is a secretary, her father a physics teacher. K defined career as “the pathway to which your job belongs”. She believed further study, a stimulating career and further advancement to be “most important. Her advisors would be the Royal Australian Air Force (RAAF) because she wanted to be an intelligence officer. K believes her mother and father took “a great deal” of interest in her vocational choice. K did not believe any of the variables influenced her vocational choice. Her mother and father’s career suggestions were ‘most important” however. She believes her interest in the military had the greatest influence on her vocational choice. K did not believe female role models had any influence on her career choice. She did greatly admire Marie Curie because ‘radiation is a wonderful thing’. K has very high self-esteem. Her highest VPI interest category was Enterprising.

HP/21

H did not nominate an occupation for either of her parents. She defined career as “a way to earn a living doing something you are interested in and enjoy”. She believed that career further study, stimulation and career advancement were “most important”. She nominated her teachers and her parents as the advisors of choice. H believed that her mother and her teachers took “a great deal” of interest in her career decisions. The level of influence of her parents and friends was minimal. She believed that her teachers had a “very important” level of influence. H did not have a specific female role model. K nominated “some” influence for role models from education. K believed that her teachers had the most influence on her vocational decisions. “I think it is my teachers who have influenced me. They’re the only ones who know what I’m good at”. H is studying astronomy. She had medium self-esteem. Her highest VPI interest category was Investigative.
TB/22

Ts mother is a motor sports manager. Her English born father is a scientist with the Australian Animal Health Laboratory. She defined career as “an area of work with different paths and possibilities”. T believed that further study, stimulation and advancement in her career were “very important”. She nominated teachers and “people with skills in the area” as to whom she would seek advice. She rated the level of interest of her father as ‘most important” and her teachers “very important”, her friends “some’ but her mother “very little’. T believed that the influence of her father and teachers was “very” important, her friends “some” her father “very little’. T believed that although she did not have a female she greatly admired, role models in education or eminent women were of ‘some” importance. T noted that although she thought that her teachers had the most influence because ‘they all recommend different areas” She viewed her own skills as being important. “I would like to take up a career that matches what I am capable of”. T self-esteem was medium. Her highest VPI interest score was Investigative. T’s vocational choice is to be a librarian.

CB/23

C’s mother is a manager. She did not nominate an occupation for her father. She defined career as “what you do to earn money”. She nominated her teachers as the vocational advisors of choice. Further study, stimulation and advancement were all “most important”. The rate of interest taken by her teachers and friends in her career decisions was “very important”. C also rated her teachers’ influence as being “most important” and her friends “very important”. Although C answered “no” to the questions asking her if she had a female figure she admired, she said that role models in entertainment and education were “most important”. C wants to be a musician. Her highest VPI interest category was Artistic. C had medium self-esteem.

CF/24

C’s mother is a music administrator, her father an architect. She defined career as “work placement which encourages you to work your way to the top”. C believed that further study, job stimulation and advancement were “most important”. Her
career advisor would be her father. She believed that the level of interest in her decision-making by her mother and father was “most important”. Her friends interest “very important” but her teachers “very little”. C rated her father as having the greatest level of influence on her vocational path “very important”, her friends and her mother had “some” influence. C believed that role models in the form of famous women and eminent leaders were “very important”. The female figure she greatly admired were her mother and a family friend. C is studying marketing and she wants to do “something in the advertising industry”. She believes the greatest influence on her vocational choice was herself. “Me, knowing what I’m interested in, and what I want from a career. Seeing billboards and thinking I’d like to be a part of that. I like the idea of power dressing”. C had very high self-esteem and her highest VPI interest category was Enterprising.
Appendix D
April 3, 1994

This letter is to confirm that Sandra Lea-Wood has permission to carry out surveys in Department of Education schools in this region toward her studies at the University of Melbourne

Yours sincerely,

Geoff

Geoff Chandler
Regional Manager
TO WHOM IT MAY CONCERN

This is to introduce a colleague of mine, Sandra Lea-Wood, who is undertaking doctrinal studies at the University of Melbourne.

Her interest is the education of gifted students.

Any assistance you may be able to offer her in this regard would be greatly appreciated.

Yours faithfully

Evelyn Tindale
Deputy Executive Director
IARTV

August
1994
REFERENCES


Chapter One

Introduction
[In the Australian banking industry]…less than six per cent of its senior managers and less than 25 per cent of middle managers are female. The banking culture is a tough male dominated one, despite all the lip service it pays to equal opportunity”.  

Individuals do tend to make course (subject) and career choices within a social context (Eccles & Harold, 1992). Consequently this study takes place against a background of social and economic influences and change. In Australia, for example the current child-care and paid-maternity-leave debate before parliament cannot help but influence young women who are focussing on possible vocations.

Historically Australian women received early recognition of their status of equality. They were granted political enfranchisement in the Commonwealth Electoral Act of 1902. Although they could vote earlier than women in many other countries however, their right to equal pay lagged behind. It was not until ‘equal pay for equal work’ was legislated for in January 1972 that women’s contributions to the workforce attracted a more equitable remuneration.

Although women have been encouraged to participate fully in the workforce they are underrepresented in many prestigious career paths. Presently in Australia only 1.3 per cent of executive positions are held by women. Female employment is diverse but women are not reaching management positions. “Things have obviously changed at entrance level ..but it’s like an elephant getting into a giraffe house. It gets in the door but, once inside, they find the house is still built for giraffes and they don’t fit in”. Australian Sex Descrimination Commissioner, Ms Prue Goward, announced recently “ The choice is greater. [E]very year there are more of us in medicine, in law, in politics…[T]here continues to be a lack of women in positions of power and decision-making …[W]omen only earn two-thirds of a man’s income and the glass ceiling is still there”.

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18 Geelong Advertiser 12th September 2001
Educators in general have become more sensitive to career development and achievement issues relating to women, and with this consensus has grown the view that more attention be given to the career development of the gifted girl (Kelly & Colangelo, 1990). Issues relating to the educational and career goals of gifted females suggest that, for many, their career aspirations are compromised and downgraded as they progress through senior high school. Studies by Kerr (1985; 1990) and Eccles (1985) suggest that gifted women do not participate in high status careers to the same extent as do gifted boys. Young women may achieve academically while at school but school achievement does not necessarily translate into career achievement (Eccles, 1985; Fleming, 1991; Hollinger & Fleming, 1992; Hoyt, 1978; Kelly, 1993; Kerr, 1985; 1991; 1997; Silverman, 1986; Yewchuk & Chatterton, 1989). This has lead to an awareness of the need to counteract the indecisiveness and apparently lowered vocational goals of the gifted girl (Kerr, 1991; Kerr & Colangelo, 1990).

Pressures and cultural norms experienced by young people are powerful socializing agents, shaping their judgments and value systems. So, too, are expectations for success. In the educational setting the student’s perceptions of work and a course of study are strongly influenced by more broadly conceived social expectations (Eccles & Harold, 1992). Career education is aimed at assisting the individual to acquire and utilize the knowledge, skills and attitudes necessary to make work a meaningful, productive and satisfying part of his or her way of living (Fleming, 1985; Hoyt 1978).

Career education could be described as a joint effort of the education systems and the broader community. The world outside the school is changing and a more uncertain labour market means that young people need to take increasing responsibility for their own career planning and development (Teese, 1997). Participants at the Dusseldorp skills forum held in Melbourne in July 1996 expressed the view that career guidance and education should extend beyond the school to involve the students in networks and partnerships between the school and those outside it (Teese, 1997).
Issues relating to gender and multiple talents impact upon the highly able. The identified complexities inherent in the life and vocational development process for gifted young women in particular are considerable and are of relevance to the kinds of career decisions made. These influences can be viewed in the light of the multi-potentiality of gifted young people and the demands made on them. The student who is highly able is confronted with an abundance of options. Multiple goals held by the young woman with multiple talents can lead to conflict and difficulty in setting specific and challenging goals (Crane, Hattie & Houghton, 1997). Confusion is experienced by gifted adolescents who often are intolerant of ambiguity (Buescher, 1985) and the resultant anxiety arising from too many options creates problems for the family as well as the gifted individual by the time vocational decisions eventually are made.

The interrelatedness of career decisions and subject choices encompass the nature and extent of both internal and external barriers to vocational decisions. Eccles (1985) and her colleagues identified what they regarded as the motivational and social factors that influence long term and short range achievement goals and behaviours of gifted students. They linked vocational and other achievement-related choices directly to two factors; the individuals’ expectations for success and the importance or value the individual attaches to the various options that she perceives as being available. Proposed from Eccles’ work was a model of achievement-related choices. The model links two environments, educational, vocational and other achievement-related choices to two factors: the individual’s expectations for success (self-efficacy), and the importance or value that is perceived as being available. The input of socialisers, primarily parents and teachers, gender role beliefs, self-concept and self-efficacy all interact. In turn, these motivational and social factors influence goals and behaviours such as vocational aspirations and choice (Eccles, 1985).

Consistent with this feminist theory many young women may dismiss their inner feelings and aspirations in order to conform to the socially acceptable norms of how a woman should behave. The young woman is exhorted to achieve, but conversely she is under constant pressure to be feminine and acquiescent. She is discouraged from achieving too much. In this way the high-ability young women
receive contradictory messages Gilligan, 1977). As a result they may even attempt to hide their abilities. Mixed messaging from their social setting is of particular relevance to gifted young women where there is a dichotomy between persevering with their former high vocational dreams and aspirations, or pragmatism, where they lower their sights in order to conform to what is seen as being appropriate for them (Kerr, 1991; Gross, 1993a).

**History of gifted education in Victoria.**

In 1872 Government secondary schools were established in all Australian states. At that time education became free secular and compulsory. In the latter half of the 20th century most states increased the minimum school leaving age from fourteen to fifteen or sixteen years so that all children would benefit from the extra time at school. Students of a similar age were kept together in the same grade regardless of ability. At this time, any entrance requirements for secondary education by way of examinations were abandoned.

There are 16025 government schools and 695 non-government or independent schools in Victoria. Education in government schools is virtually free. Independent schools which comprise around 1/3 of the student population, charge fees. In the large public (private) schools the fees are considerable, being approximately $12000 per annum. It is indicative of parental concerns that many bright students are educated in independent (private) schools. In 2002 the schools receiving the highest scores in the Victorian Certificate of Education were private schools.

Provision for the education of gifted children in Victoria has been ideologically driven. Traditionally Australian society, and no less its teachers, have prided themselves on being egalitarian and “anti-elitist”. In 1957, in a move designed to end perceived privilege and to promote equality, Victoria abandoned selective state schools, streaming practices and special classes for the higher-achieving students. These were replaced by comprehensive primary and secondary schools based on the new English school system, these being deemed to cater for all children in the local

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neighbourhood. Such schools were intended to provide for children with a wide range of abilities.

Due to the impact of a Socialist Left ideology in the teacher unions the Victorian Government actively discouraged any form of identification of, or provisions for, intellectually gifted students within the Government school system. Consequently, Victorian schools were extremely responsive to the philosophy of equality. At this time the only acceptable differentiation within the Government school system was for intellectually disadvantaged students.

Societal pressures to meet the needs of disadvantaged and physically and intellectually disabled students were highlighted by the Commonwealth Schools Commission in 1973 as, due to the post-war baby boom and migration intake, insufficient numbers of trained and competent teachers were available to cope with the large school population increase.

The egalitarian belief was that provision should not be made for intellectually-able students because of the pressing needs of more visibly disadvantaged groups. In tandem with that belief the state education departments and teacher unions of the day subscribed to the popular stereotype that gifted students were able to succeed in any circumstance. Individual differences were not recognised as being anything more than a function of socio-economic status, ethnicity and gender. Thus “an educational philosophy in which social factors are sometimes considered more important than other factors” was fostered (Braggett, 1986, p. 15).

Any modification of this policy has not been accomplished easily. Even though two selective high schools were re-introduced and have survived within the Victorian system, selecting students on the basis of intelligence and performance and providing for them as a discrete cohort does not sit easily with the Australian concept of egalitarianism and dislike of elitism. This is not true for children with physical gifts, especially those who excel in popular sports. The Australian Institute of Sport and the College of the Arts have been established to develop the talents of physically and artistically gifted people. Indeed each state also has an Institute of Sport. Such
settings for children with outstanding potential or giftedness in the areas of art, music, dance or sport were not considered to be elitist.

As early as 1975 the need for research into giftedness in Australia was identified by a Schools’ Commission report. Mr T. J. Ford, the Director of Secondary Education in Victoria responded to the challenge and sent an Inspector of Schools, Mrs Pat Waller to the first world conference for the gifted, held in London during 1975. Her confirmation of the needs of these children resulted in Ford introducing a Gifted Children’s Task Force. The objectives of the Task Force and the Gifted Children Committee were to raise school and community awareness to the needs of highly able children and to develop appropriate compacted curriculum and resource material. The Victorian Association for Gifted and Talented Children (VAGTC) with Ms. Ev Tindale, Deputy Head of Presbyterian Ladies’ College (PLC) as President, was also established. Messrs T. Commerford and K. Creed were appointed to the task force and with Mr Ford’s ongoing support established the Accelerated Learning Program essentially a compacting of the curriculum at University High School.

In 1983 Australia held its first national conference on gifted and talented children in Melbourne, Victoria. Funding for the three-day conference was through a $11000 grant from the Special Projects Program of the Commonwealth Schools Commission. Although the Federal Minister for Education declined to attend, Mr Kim Beazely Snr., a retired federal minister, did so. No politician or Government representative for the host state, Victoria, was present.

Despite achieving tangible results, the Task Force and Gifted Children Committee were disbanded in 1984. The concept of egalitarianism had proven to be of paramount importance and fostering excellence consistently treated with some suspicion. Only two selective high schools together with the program at University High School survived. The notion of special provisions for one section of society, in this case the intellectually talented, is not well understood and continues to be regarded with a degree of hostility within the community as a whole.
A Senate Select Committee Report in 1989 made unanimous recommendations for the education of the Gifted and Talented in Australian schools. In the same year the Federal Labour government vetoed all Senate Select Committee recommendations arising from that report but approved 67.3 million dollars funding for a House of Representatives initiative on the sporting gifted, “Going for Gold”.

It was not until the “Bright Future’s Policy” was initiated by the Victorian Department of Education under a Liberal Government in 1995, that specific planning for the education for intellectually gifted children was actively encouraged in the schools. This policy was a watershed in the history of gifted education in Victoria. It gave formal Government recognition of, but not financial assistance to, the needs of gifted students by outlining a range of strategies aimed to provide appropriate educational experiences for gifted students in Government schools.

In November 2000 the Employment, Workplace Relations, Small Business and Education Legislation Committee within the Australian Commonwealth Liberal Government called for submissions regarding the education of gifted students in Australian Schools. The inquiry investigated the Commonwealth’s role in the development of current programs and policies for gifted children. Recommendations emanating from this inquiry have yet to be implemented.

**Characteristics of the Australian tertiary system.**

Within the Australian university system undergraduate degrees tend to reflect a vocational component, unlike the US undergraduate degrees or college years which are generalist in nature. In the US students can elect to declare a major study prior to college or enter as “undecided”. Of the students who go on to four-year institutions to obtain their bachelor’s degree approximately half select each of these two options (Johnson, 2001).

Young people in Australian schools however are required to make important vocational decisions in the later years of high school. Schools strongly encourage
students to select prerequisite subjects linked to academic orientations and their future aspirations at the conclusion of Grade 10. These decisions are made therefore while adolescent students are confronted with other considerations within their social environment.

**Career advice within the Australian (Victorian) school system.**

Within initial teacher training institutions the education of the gifted is addressed only briefly, if at all. Some post-graduate qualifications in Special Education include a unit on gifted students. Since the disbanding of the CHIP Unit at the University of Melbourne there is no evidence that secondary trained career teachers have any specialised understanding of the needs of high-potential students.

Career advisors possess either formal and/or informal qualifications. Those people holding this position and employed by the secondary school may hold undergraduate degrees in teaching plus post-graduate diplomas in counselling. Career advisors may hold degrees also in social work or psychology. In addition short informal courses and training for career advisors are offered by the Career Education Association of Victoria (CEAV). Thus the people occupying the position of career advisor in Australian secondary schools have an extremely diverse range of backgrounds.

The career industry has developed a number of instruments with which to advise young people about their vocational trajectory. The Vocational Preference Inventory (Holland, 1985a) has been used consistently. The VPI scales of Realistic, Investigative, Artistic, Social, Enterprising and Conventional incorporate the main dimensions found in most interest inventories other than Holland.

**Identification of gifted for the purpose of this study.**

Outstanding individual achievement demonstrates the existence of giftedness, but the concept itself is difficult to describe or define. Some children appear to achieve in one area only, while others are accomplished in many domains. Others
may have specific talents in the intellectual spheres, in the visual or performing arts, in the psychomotor area, in leadership, or social skills. School students often are identified as being gifted because they are high achievers in academic subjects.

In 1994 the population from which many of the students in the current study were drawn were being educated in Victorian government schools. These schools were not encouraged to foster intellectual giftedness or identify high ability. Australia is not a test-oriented society. Schools generally are reluctant to administer intelligence tests. The Victorian school principals who responded to the author’s request for participants to take part in the investigation demonstrated a concern for, and a belief that, they should be catering for their “able” students. This was at a time when it was politically unpopular for them to do so. It must be appreciated therefore that not all of the students within the sample group were identified as being intellectually gifted on a standardised psychometric measure. They were identified by their schools as ‘gifted’ because they were highly able, academic achievers.

**Overview of study purpose.**

The current study is an attempt to identify the variables that influence the vocational choices of highly able adolescent girls at the time of making those decisions. It is therefore exploratory in its aims and hypothesis. It is important to recognise that a review of the literature has indicated that much of what has been written is retrospective and/or anecdotal and based on biographies of eminent and successful women. Examples of these approaches are the important investigations of Cox (1996), Kaufmann (1981), Kerr (1991), Rimm (2000), Silverman (1991), Tomlinson-Keasey and Little (1990) and Wilson (1994).

Eccles (1985) wished to focus attention on such variables as parents, peers, teachers and counsellors that are amenable to intervention so that highly able adolescent females can make informed vocational decisions in terms of their personal development and future financial autonomy. In the current study these variables are explored in relation to the internal dimensions of aspiration and self-esteem. At the time of developing the VPI Holland (1985b) put forward suggested topics for further
study. These were in the areas of gender, intelligence and the work place. The workplace, in this particular instance, is the school. Examined also are the wider social influencers of family, friends, media and society in general.

Using a combination of qualitative and quantitative methodologies spanning a six year period, the variables that influence the vocational decision-making of highly able adolescent girls have been examined systematically through three interrelated studies. Study One is quantitative in nature. High-ability adolescent girls from Grades 10, 11 and 12 in Victorian government, independent (private) single-sex and co-educational settings were selected by their schools to take part in the current investigation. The same schools randomly selected a similar number of average ability classmates of the highly able cohort to act as a control group. Data collection for this study spanned three years.

Study Two is an extension of Study One. It seeks to establish through a moderate time-frame a retrospective insight into issues of vocational choice and the stability of those choices while the subjects were still involved in the educational process. Study Two is a qualitative study which addresses these issues replicating case-study methods used by others. The data collection took place three years post Study One. In this investigation the cohort comprised high-ability young women exclusively. The girls all took part in the original Study One and had experienced both single-sex and co-educational settings. The researcher was able to obtain their school records and contact them in regard to their involvement in the subsequent study.

Study Three enabled the findings from the earlier studies to be applied to a specific cohort. The population in this qualitative study comprised young women enrolled in an accelerated program for high-ability students at a single-sex government school. Data collection for Study Three took place in the same year as Study Two.
In this investigation the internal and external influences within the environment experienced by the highly able adolescent girl is examined and a model of vocational choice proposed.
Chapter Two

Introduction and Review of the Literature

Cognitive and affective attributes of the gifted young person combine to influence and complicate development (Buescher, 1985). Consequently these characteristics need to be acknowledged so that the potential of the high-ability adolescent is maximized. Thus any meaningful investigation into vocational influencers needs to take into account the general processes of adolescent maturation.

Adolescents are not a homogeneous group but a highly diversified and differentiated cohort of young people in a period of development generally accepted as spanning the ages of 12 to 25. These adolescent years are characterized by considerable biological and developmental change which interacts with the environment. Such interpersonal interactions of young people within their social environment facilitates an insight into the influences of friends, teachers and parents on their developmental trajectory.

Social interactions, like biological interactions, take place within a larger context. Behavioural sciences traditionally have equated the passage of time with chronological age using it as a as a frame of reference for the study of psychological change in individuals as they grow older. One model, that of Bronfenbrenner (1977; 1986), has characterised interactions between the individual and the environment as being in the form of an ecological system. The influence of environmental dynamics on the developing individual can be examined by incorporating these interrelating and interactive factors into a coherent theory, the. Over time the environments described in this model impact on the adolescent by developing and nurturing social values and life expectations. Bronfenbrenner’s ecological model contributes therefore to an understanding of the socio-cultural environment, identifying major structural systems and describing the nature of their influence on the growing child.
In the Bronfenbrenner model industrialized society is conceptualised into four external systems which affect development; the Microsystem, the Mesosystem, Exosystem and the Macrosystem (Bronfenbrenner, 1986). Within the Microsystem of the adolescent the importance of the family is followed closely by that of friends and peers as well as other social groups comprising the wider community. The Microsystem is referred to by Bronfenbrenner as the “proximal level of environment” (Muus, 1997 p. 322). It recognizes that although the home and the family are the principal contexts in which human development takes place, other settings or environments interact with developmental processes. Events at home for example can affect a child’s progress at school (Bronfenbrenner, 1986).

Several interacting Microsystems constitute the Mesosystem. The Mesosystem comprises linkages and processes that take place between two or more settings. Mesosystem interaction is seen in the multiple role-participation experienced by adolescents. People play different roles as they interact within various Microsystems; for example, the simultaneous roles of son or daughter, friend, student, team player, band member, or worker. With the passage of time, Microsystems and Mesosystems are constantly varying. These changing roles experienced by individuals over a time continuum are crucial to Bronfenbrenner’s theory. In the case of the adolescent for example, Mesosystem interaction may be the interrelation between school, home and the workplace or prospective workplace.

The structures found within the wider community comprise the Exosystem. This is referred to by Bronfenbrenner as a more “distal environmental influence” (Muus 1997, p. 327). The three Exosystems most likely to affect the developing child are firstly the relationships between the parents’ workplace, secondly the parents’ social network and thirdly the wider community. By affecting what an adolescent can or cannot do, the Exosystem may influence the quality of the Micro and Mesosystems negatively or positively. For example, working conditions and salaries within the parental workplace impact on the lives of the adolescent. The media, in the form of television programs specifically targeted at the adolescent population, exerts substantial influence on the young person. That influence may be exposure of the
adolescent to undesirable concepts or the inhibition of positive interaction between
family members.

The Macrosystem consists of the fundamental social structures within a
culture: cultural, political, social, legal, religious, economic, educational and public
policy values. It exerts a powerful but indirect influence on the individual and focuses
around the life value systems from school entry, adolescence, entering the work force,
marriage, retirement and death.

The Bronfenbrenner model has relevance for the current investigation as
adolescence marks a continuing experience of physical and emotional development
interacting with the wider environment and leading toward individuation. Intrinsic to
this process of identity definition are the inevitable questions relating to financial self-
reliance. These include whether or not to continue formal education beyond high
school, what vocation to pursue and how to overcome obstacles which may lie in the
path of accomplishing these vocational goals. Such choices are influenced by the
social environment of the young person.

Individuals tend to make course (subject) and career choices within a social
context. It has been suggested that ultimately social influences predispose vocational
decision-making (Eccles, 1985; Hollinger & Fleming, 1992; Hollinger, 1991; Noble,
1989). In the educational setting the student’s perceptions of course value are strongly
guided by more broadly conceived social expectations This means that they choose
from an array of subject possibilities which are perceived by them to be appropriate
precursors to an acceptable vocation. Consequently the surrounding social context
within which the young person is embedded plays a decisive role in the choices they
made.

Career goals have been cited as reasons for choosing a particular course major
(Brown & Strange, 1981). That is, the selection of a college major is analogous to
vocational decision-making (Noble, 1989; Rimm, 2000a; Weishaar, Green &
Craighead, 1981). Naylor (1993) proposed that measured educational and vocational
preferences contain similar interest themes. Interest can be regarded an expression of
what one wants. Thus interest themes have been cited as important predictors of
educational (subject) choice in addition to vocational preferences (Naylor, 1993). He observed however that although the links between educational and vocational interests are assumed, rarely are they investigated. From this premise the current concept of “interest” or “subject selection” in vocational choice has developed.

Young women in particular are faced with special vocational issues. Socialisation pressures and cultural norms are powerful agents which interact to modify behaviour and impose community expectations upon the adolescent. In contemporary society, young women invariably take into account societal expectations associated with career, marriage and/or childbearing. Their decisions include whether or not to postpone marriage and children in order to establish a career. If they marry, they need to consider whether to have children early in their vocational trajectory or indeed pursue a profession which may result in men’s negative perceptions of their social desirability (Kerr, 1997).

Theories of vocational choice.

Theoretical perspectives associated with vocational development can be broadly categorised into two distinctive approaches: differentialist views and developmental views. Advocates of the differentialist perspective suggest that vocational choices of young people are based on matching their abilities, interests and personality profiles to the demands of a particular vocational requirement (Holland, 1985b). Within the differentialist context, vocational counsellors consider the skills and attitudes of the young person in order to guide them into the career which best fits their personal attributes.

When determining vocational choice Holland found that success in academic subjects at school strongly influenced career directions. Rimm (2000b) also noted that success in academic subjects predisposed career directions. According to Holland the construct of interest as reflected by subject selection, appears to be an important predictor of automatic vocational choice (Holland, 1985b) and that both males and females assign a great deal of importance to personal interests and preferences (Strange & Rea, 1983). According to social learning theory interest develops from satisfaction derived from fulfilling internal standards: satisfaction in the knowledge
that one has performed competently. Thus perceived self-satisfaction is gained from performance accomplishment (Bandura, 1982; Bandura & Schunk, 1981).

Of relevance to this study developmental theory implies that young people between the ages of 15 and 25, whose cognitive capabilities are enhanced, appear to make more sophisticated vocational choices (Neisen, 1987; Super & Hall, 1978). These authors implied that gifted young people are more adept at evaluating their own talents and acquiring a vocational identity or an understanding of self through one’s role within society. As a group they characteristically become more cognizant of appraising their skills realistically in relation to vocational choice and job requirements.

In contrast to the differentialist’s view, psychologists and practitioners who endorse a developmental perspective contend that an individual’s vocational development advances as a function of maturation. It is a process of the growth trajectory (Erikson, 1985; Gottfredson, 1981; Havinghurst, 1972). The developmental view is compatible with developmental stage theories where vocational maturity advances through distinguishable phases. Hence an individual’s vocational development progresses in sequential stages from childhood through adulthood. Developmental psychologists believe that an individual’s stage of development therefore is the important factor in occupational choice (Ginzberg, 1972). In this context Holland’s (1985b) theory has been criticized for its failure to recognize developmental antecedents in vocational choice.

An alternative focus to both developmental and differentialist theories is that which questions the assumption that an adolescent’s aspirations or particular skills play a significant role in determining their ultimate vocation. The relevant literature suggests one’s vocational goals are primarily a reflection of such variables as childhood concepts regarding socially acceptable roles appropriate to race, sex or socio-economic class (Ginsburg 1972; Gottfredson, 1981; Neilsen, 1987; Osipow, 1990; Super & Hall, 1978).
Fulfilment of potential theories.

The current investigation focuses upon high-ability adolescent girls and as such fulfilment of potential is an important issue. No single factor appears to account for high accomplishment however (Walberg & Zeiser, 1997). Retrospective studies such as those of Simonton (1997) try to determine why gifted people attain eminence. The highly renowned individuals in Simonton’s histriometric study are recognised as profoundly gifted and, as such, his work has limitations for purposes of the current study. Simonton does however identify the family as being a significant influence in the ultimate achievement of genius.

The work of Tannenbaum (1983; 1997), Walberg and Herbig (1991) and Walberg and Zeiser (1997) offer a detailed examination of the predictive variables of fulfilment of promise as these interact. The mutuality of the educational and environmental factors identified by Tannenbaum as well as by Walberg and his colleagues are seen to directly influence learning in childhood and adolescence. In turn, these influence talent development and possible adult eminence.

Tannenbaum (1983) clearly identifies the role of the environment in the relationship between fulfilment and potential. The five internal and external variables that in Tannenbaum’s model “mesh into excellence” are illustrated within a starfish design. These variables link to influence a highly able young person’s opportunity to enter an appropriately advanced vocational level and to experience fulfilment (Tannenbaum, 1983). Tannenbaum proposes that children who have the potential to succeed as gifted adults require not only general and specific abilities but appropriate personality attributes as well. These, together with special environmental influences such as a school and home which nurture intellectual endeavour, combine to facilitate the emergence of talent.

Tannenbaum’s five interacting elements which link fulfilment and childhood potential are:

- superior general ability or the ‘g’ factor, usually reflected in psychometric assessments;
• special abilities and aptitudes such as musical, artistic or mathematical talent;
• experiences in the home and school, parents, teachers and peers;
• chance factors;
• personal attributes of drive or motivation.

Walberg and Zeiser (1997) also identify achievement-ability as indicated on standardized tests as a variable which influences learning and ultimate achievement. Like Tannenbaum they too nominate the motivation and self-concept of the individual, together with quality of instruction (teachers), home life (parents), and the classroom environment (chance factors). Additionally their research also suggests that the peer group selected outside the school is important. Another aspect is the exposure to mass media and to popular culture – an important variable - notably through television (Walberg & Herbig, 1991; Walberg & Zeiser, 1997). More latterly it is argued that internet access through widespread computer use is also an important addition to the impact of mass media (Rimm, 2001).

In framing the current study which examines influencers of the vocational choices made by highly able young women, the theories of Tannenbaum and Walberg are of particular relevance. It is proposed that the elements of general ability, self-concept, drive, motivation, interest, mass-media as well as the educational and home environment influence vocational choice and ultimate fulfilment of potential. In the context of career choice the variable of motivation espoused by Tannenbaum, Walberg and Zeiser can be considered as equating with aspiration.

**A construct of interest and the theories of Gottfredson, Bandura and Holland.**

In the current investigation the concept or term ‘interest’ is of considerable relevance. It is used in two different ways. Firstly, vocational ‘interest’ is measured by Holland in the Vocational Preferences Index and subsequently identified by many of the participants in the study as the most important dynamic influencing their vocational choice. This view of interest could be understood as ‘internalised ego-
identity’ or ‘avocation’ and could be described as an intrinsic self-belief allied to vocational aspirations.

The second construct of ‘interest’ as used in this study is that of the subjects’ perceptions of the views of their parents’ toward their vocational decision making: that is, their parents supposed awareness or attention and concern. This construct of interest is a strong perception on the part of the subjects but not necessarily a realistic appraisal. It is however a developmental view regarding the expression of vocational goals and subject to change.

Gottfredson (1981) proposed a theory pertaining to the development or evolvement of occupational aspirations in five stages from early childhood through to adolescence. She believed that during adolescence young people tend to disregard vocational choices that they perceive as being unsuitable or inappropriate for one’s sex or psychological comfort zone. She has made the assumption that individuals seek occupations that are compatible with images of themselves and that social class, intelligence and gender are important determinants of self-concept and career aspirations. Gottfredson as such has provided an explanation of how the evolution of occupational aspirations is influenced by demographic factors.

In contrast Holland (1985b) proposed a model explaining vocational personalities or types and proposed occupational directions. Differentialist orientations consistently imply that people’s interests and vocational choices flow from their life histories and personalities, and that satisfying career choices and achievement depend on a good fit between occupational interest and environment (Holland, 1985b; Bandura, 1997). Holland’s (1985b) approach represents an efficient means of organizing and interpreting information about people and their occupations across quite divergent social and cultural settings (Kelso, 1986).

An important association also has been made between self-efficacy and vocational interest (Betz & Hackett, 1981; Bandura, 1997). Self-efficacy is the expectation the one has the actual ability to complete a given task or goal. According to social cognitive theory the growth of intrinsic interest is fostered through affective
self-reactive and self-efficacy mechanisms (Bandura, 1997). The strength of self-efficacy will influence the amount of effort devoted to pursuing a goal (Kishor, 1981; Kelly, 1993). A high sense of efficacy promotes an expectation of success in the individual. High perceived efficacy or expectations of success amongst young people has been found to result in broader career paths and greater vocational interest (Betz & Hackett, 1981).

In Holland’s (1985b) view vocational interests are an important aspect of personality. For example an introspective personality type will be less likely to select a vocation that will require him/her to extend beyond their psychological comfort zone. Holland also proposed that behavior is determined by the interaction between personality and environment. He proposed too that interest inventories should be regarded as personality inventories, and that interests in turn, lead to the development of competencies. Competencies then crystallize into associated values contributing to the creation of an individual who exhibits a characteristic life, style and personality (Holland, 1985; Kelso, 1986).

Each personality type is believed to be the product of a characteristic interaction among a variety of cultural and personal forces. These connections include peers, biological heredity, parents, social class, culture and the physical environment. A child absorbs from parents a special genetic inheritance as well as specific experiences which may predispose an individual to embrace particular activities, and have aversions to others. Such early life experiences ensure that some activities are preferred over others. These partialities may then emerge as well-defined interests. A person’s interests and competencies combine to create a particular personal disposition that leads one to think, perceive and act in certain ways. For example people who resemble a social type, seek out social occupations such as teachers, social workers and ministers.

Holland believed that the ability to identify potentially damaging or advantageous work environments is imperative to mental health. He claimed that people search for a compatible environment that will enable them to exercise their skills and abilities to the optimum. When making vocational decisions, matching the
individual’s interests with those characteristics required by specific occupations has a long tradition within psychology. This theory is often referred to as “goodness of fit” (Gottfredson, 1981; Holland, 1985). The concept of “best fit” an extension of “goodness of fit”, was referred to also as the “trait factor” (Kelso, 1986).

Holland developed an instrument to measure his theory, The Vocational Preferences Index (VPI). Although the VPI was developed originally to assess personality it is also a measure of vocational interest used by career counsellors. The eleven category scheme identifies personality and occupational type relevant to a variety of career options (Holland, 1985). Its use is meant to match an individual’s personality to appropriate career options (Holland, 1985).

Holland’s theory is based on the assumption that most people can be categorized into one, or a combination, of six personality types; Realistic, Investigative Artistic, Social, Enterprising and Conventional (RIASEC). According to Holland occupations represent a way of life, an environment, rather than a set of isolated work functions and skills. The RIASEC dimensions reflect six model environments. The pairing of personalities and environments, it is argued, leads to predictable outcomes which influence vocational choice: that individuals choose occupational fields perceived as being compatible with images of themselves and their predominant personality type.

Relevant to the current study is Holland’s view of the combined influence of perceived actual intelligence, or how intellectually able one believes they are, and a person’s own personality type. The basis of his premise is, therefore, that a combined influence of actual intelligence, self-evaluation of ability, interests and personality variables can influence and predict vocational choice (Holland, 1985).

There are conflicting studies on how well Holland’s theory can be applied to gender differences. The findings of Matthews and Walsh (1987) question the generalisability of the instrument and whether it can be applied to women as well as to men. One study of Holland’s theory of occupational types, personalities and interests examined the relationship of traditionality of occupational preferences to
personality-occupational environment congruence and found an association (Wolfe & Betz, 1981). Thus the college women whose vocational choices were in non-traditional fields were significantly more likely to make choices matching with their personality type than women choosing traditional fields. Other studies have found that some groups of women were described accurately by the appropriate Holland scales and others were not (Harvey & Whinfield, 1973). These suggest that the VPI discriminates among groups having particular patterns not always occurring within all occupational groups. Harvey and Whinfield’s (1973) study into descriptors of women’s personality styles and vocational interests found strong evidence that the Investigative, Enterprising and Conventional styles did apply to women. The Realistic, Social and Artistic scales however were more ambiguous.

Lack of consistency in research findings pertaining to Holland’s theory would suggest then that it is differentially valid for dissimilar groups of women. Of the 184 women in the Wolfe and Betz (1981) study, those whose choices were strongly influenced by sex-role stereotypes selected occupations traditionally considered appropriate for females: for example, nurse, teacher or secretary. Thus women who preferred traditional career fields were more likely to make choices incongruent with their personality types: that is, they were influenced by other factors. Women who chose non-traditional careers (53%) showed strong congruence with their Holland type of Masculinity/Femininity21 (Wolfe & Betz, 1981). These findings seem to predict more accurately the preferences of women who have resisted the influence of socialising agents which encourage traditional female vocational goals. When viewing masculinity as a social construct, women identified as being more masculine personalities were less strongly influenced by occupational stereotyping and more likely to choose non-traditional vocations (Wolfe & Betz, 1981).

In addition further studies suggest that women with androgynous qualities are more able to cope with societal pressures (Howard-Hamilton & Robinson, 1991; Lea-Wood & Clunies-Ross, 1993; Moir, & Jessel, 1991). The Howard-Hamilton Robinson study found that a high proportion of adolescent gifted girls in Governor’s schools in the USA displayed characteristics generally evident among young males. For the girls

21 Masculinity/femininity personality scale discussed on page 77.
in this study the attributes of self-reliance, dominance and leadership seemed to be associated with achievement-related behaviours in general and non-traditional careers in particular.

**Gifted girls and vocational choice.**

Holland proposed that a combined effect of actual intelligence, self-evaluation of ability, interests and personality variables can influence and predict vocational choice (Holland, 1985). Because this current investigation focuses on the vocational trajectory of high-ability young women the career development studies pertinent to gifted girls such as those reported by Kerr (1996) are relevant. Such research suggests that career interests for average students change from junior to senior high school, stabilising by age sixteen. Kelly & Colangelo (1990) found that gifted children demonstrate earlier career maturity by being more certain of career choices. Kerr (1991a) also has observed that some very focused highly able girls “early emergers” (p89) seem to be able to decide their future careers even before they enter school and frequently are held up by their teachers as the ideal. On the other hand the unique characteristics of highly able school students engender problems such as indecision and abrupt change in vocational decisions (Kerr 1991b) as gifted students appear to show less stability than non-gifted students in their interest patterns. Fredrikson (1986) also documented the indecision experienced by gifted students when choosing a career resulting in frequent changes in college majors.

Many studies including those of Kerr (1991b), Silverman (1991a; 1991b) and Hollinger (1991) have identified the different messaging that high-ability young women may receive in the course of their vocational trajectory contributing to this indecision. One of the reasons appears to be the multi-potentiality of the gifted young person who with more than one talent may face contradictory messages as to the optimum employment of their abilities (Kerr, 1991b; Crane, Hattie & Houghton, 1997). Because they have what has been referred to as “an embarrassment of riches” (Galbraith & Delisle, 1996, p96) therefore, such students find the selection of a vocation difficult (Kerr, 1983; 1991b; Webb et. al., 1982).
Multiple goals held by the multifaceted young woman leave her vulnerable to conflict and difficulty in setting specific and challenging goals (Crane Hattie & Houghton, 1997). The highly able young woman is told “you can be anything you want to be” (Hollinger, 1991 p135), as a result of which confusion is experienced, gifted adolescents tending to be intolerant of such ambiguity (Buescher, 1985; 1991). Further, the anxiety and vocational indecision created by too many options generates problems for the family as well as for the gifted young person.

As well as problems arising from vocational commitment, the pressure for high ability young women to focus on a high status career has been documented (Silverman, 1991). In these circumstances the gifted girl will be encouraged by teachers and family to concentrate on vocational goals that are perceived to be appropriate careers commensurate with her ability (Kerr, 1983; 1991; Perrone, 1997; Webb et. al. 1982). This is a general phenomenon where the most able students tend to be directed toward medicine and law or to take up majors in such subjects as physics and pure mathematics.

Anecdotal reporting suggests that women still are under-represented in high prestige and high income careers however (Arnold, 1993: Callahan, 1991; Barker, 2000; Buckle, 2001; Reis & Callahan, 1989) as occupational stereotypes clearly suggest that high status vocational options primarily are masculine (Hollinger, 1991). Certainly within the Australian workforce the majority of high status positions leading from law and medicine continue to be male dominated (C-LIB, 1996). Nevertheless the high-ability young woman can feel confronted with pressure to focus on these high status careers. Not all high-ability girls wish to be rocket scientist, doctor or lawyer however. Consequently this type of young woman may not follow her interests and dreams believing that they are perceived as unworthy of her intellectual ability. Limits are forced therefore on the kinds of career directions the gifted girl considers acceptable. (Hollinger, 1991; Rodenstein Pfleger & Colangelo, 1977; Silverman, 1991a).

Lowered vocational aspirations upon reaching adolescence also become evident as gifted young women often are confronted with mixed societal messages
and occupational stereotypes which suggest that high-status challenging career options are primarily masculine. Career-related ambiguity is compounded by gender identity confusion when girls are told they can be both masculine and feminine (Hollinger, 1991).

Although average primary schoolgirls often have modest ambitions: ‘housewife’ ‘mother’ or ‘nurse’ gifted girls have more lofty ideals, ‘lawyer’, ‘palaeontologist’, ‘doctor’ or ‘engineer’. By the end of their secondary schooling however many of these young women have modified their ideas and become vaguely accommodating (Kerr, 1991a). The young women in Kerr’s research for example left school full of expectation. Yet many of these women became adaptable over time - too adaptable (Kerr, 1996). Ten years after graduation her gifted classmates had denied their abilities. In addition most viewed themselves as self-assured and self-accepting. They were homemakers, teachers or nurses, vocations viewed as being traditionally appropriate for women.

Twenty years after graduation many of Kerr’s classmates were found to be more accepting of their giftedness. Four different categories of women could be identified within the group. The “transforming women” (Kerr, 1996, p234) directed their talents to the creation of appropriate careers and businesses in which they could apply their skills. A second group were committed to the traditional occupations they had originally selected, such as teaching and homemaking. Another more career-oriented group were continuing to experience vocational success. A fourth group of women had all but forsaken their earlier dreams and choices as they struggled with unsupportive environments.

A study by Kaufman (1981) identified similar patterns. From her observation of 322 highly gifted Presidential Scholars of 1964 to 1968 she found that the issue of conformity versus achievement differed markedly between boys and girls. The boys aspired to high status careers - doctors, lawyers and professors. The girls however, like those in Kerr’s group tended to aspire to often poorly paid moderate status careers in business and secondary education.
A study by Card, Searle and Abbles (1980) also supports the findings of Kerr and Kaufmann but added a specific causal dimension. They found that although highly able young women maintained high grades in school and started out with higher achievement potential, there was a critical shift when achievement needs were replaced by relationship needs during adolescence. After graduation, girls were faced with having to comply with societal expectations of a successful marriage and children. Taken together these findings suggest that gifted young women are encouraged to actively develop their talents and pursue careers but not at the expense of traditional values of nurturance and selflessness. As a consequence they may make concessions in order to adjust to a society which rewards “sociability” (Gilligan, 1977; Kerr, 1991b; Perrone, 1997; Rodenstein, Pfleger & Colangelo, 1977).

Problems arise from the perceived pressure to make decisions about vocational selection in order to apply for, and accept a place in, a tertiary institution. This is particularly relevant to the Australian educational system which requires young people upon completion of high school to chose a tertiary program linked to vocational direction. The American concept of a generalist college education is not an option for young Australian women.

The internal influencers of self-esteem and career self-efficacy.

There are a number of dimensions, internal and external, which may influence the vocational decision-making of highly able adolescent females. Throughout this study the terms self-esteem and self-concept have been used interchangeably. Harter (1990) has referred to self-esteem as global self-worth, the overall value one places on the self as a person. The evaluative self in which individuals make judgments about competence or adequacy can be referred to as self-concept (Harter, 1990; 1993).

In choosing a vocation, one is in effect choosing a means of implementing a self-concept. Occupational choice therefore represents a translation of a person’s self into vocational terms (Hattie & Marsh, 1997; Herr & Cramer, 1996). It is argued that
career development parallels personal development and that individuals tend to choose occupations which are consistent with their self-concept (Herr & Cramer, 1996). Knowing and accepting one’s self therefore will be an important determinant of vocational decision-making.

Establishing career-related goals or even initiating satisfactory vocational decision-making in young people, particularly females, appear to be problems exemplified by a lack of self-confidence and self-efficacy (Hackett & Betz, 1981). The internal or endogenous barrier can emanate from the characteristics of the individual, regardless of environment (Webb, 1993). Exogenous barriers are problems that arise because of interactions within the environment of family or culture. Negatively internalized self-concept and the influence of external environmental barriers require strong personal self-efficacy to surmount (Hackett & Betz, 1981).

Both anxiety and low self-esteem are seen as being important interactors in reaching a vocational direction (Brown & Strange, 1981; Hamer & Bruch, 1997; Lucas & Wandberg, 1997). High self-esteem has been identified as a strong predictor of early vocational decision-making whereas low expectations of success are a major source of internal constraints influencing the diversity of vocational choice.

**Self-efficacy and career choice.**

Theories of social cognition indicate that there are two facets of the self, a ‘private self’ and another ‘self’ that is presented to society (Fisk & Taylor, 1991). Studies of how people make sense of themselves and others suggests that people tend to think of themselves in terms of their ‘actual self’ (how they currently are), their ‘ideal self’ (how they would like to be) and the ‘ought’ (what they think they should be) (Markus, Cross & Wurf; 1990; Fiske & Taylor, 1991). A “possible self” allows the individual to experience a relationship between one’s current self and an imagined future self (Markus et. al., 1990). It incorporates ideas of what people may become, what they would like to become, and what they are afraid of becoming (Markus et. al., 1990; Fiske & Taylor, 1991).
For adolescents, the ‘possible self’ is a specific representation of the self in a future state. Possible selves provide focus and organization for the pursuit of goals. A gifted young woman will perceive an academic self, a social self, an emotional self and a physical self. Which aspect of the self influences human behaviour, in this instance the vocational decision-making of highly able adolescent females, depends largely on which particular aspect of the self has been accessed. Appropriate self-knowledge is necessary in order to facilitate this focus. Ideally such knowledge includes personal efficacy expectations, as well as images of the self in future settings.

Self-efficacy is the expectation that one has the ability to complete a given task or goal (Bandura, 1997). Together with goal persistence in the face of barriers, efficacy will determine whether a particular behaviour will be initiated. The strength of an individual’s self-efficacy will influence the amount of effort devoted to pursuing a goal by enhancing intensity and persistence of efforts (Bandura, 1997; Bandura, Adams & Beyer, 1977; Kelly, 1993; Kishor, 1981). Research has identified an association between self-esteem and career efficacy. In a Fijian cohort higher self-esteem has been found to correlate with higher scores on career task self-efficacy scales (Kishor, 1981). In this case self-esteem has been regarded as the generalized form of perceived self-efficacy.

Bandura (1997) believes however that any positive correlation between the two terms is erroneous because self-efficacy is concerned with judgment of personal capacity and self-esteem is concerned with judgment of self-worth. He proposes that individuals need more than high self-esteem to attain success in given pursuits. Self-liking does not relate to performance attainment (Bandura, 1997). He does concede however, that development of personal efficacy is likely to foster positive self-esteem, this being identified as an important internal variable in vocational choice. Thus an extension of personal self-efficacy is career self-efficacy which represents an individual’s confidence in making career decisions and one’s expectations to enter a particular career successfully.
Career self-efficacy.

In the behavioual sciences the quest for ego identity can be interpreted as being the selection and development of a career path. Identity achievement is usually attained around the ages of 19 to 23 years and occurs when young people make firm a commitment to career, values and beliefs (Buescher, 1991; Mc Adams 1985).

Career self-efficacy is seen as an important variable in career choice and development and is influenced by gender, self-esteem and academic ability (Betz & Hackett, 1981; Hollinger & Fleming, 1992; Kelly, 1993). The relative importance of the variables however can be disputed. Betz and Hackett (1981) found that gender issues influenced perceived vocational options more than academic ability. Thus gender considerations influence career self-efficacy. In contrast, Kelly (1993) found achievement or academic ability to be a stronger predictor of career self-efficacy than was gender.

The differences in these two findings could well be a function of different sampling profiles. The college women studied by Betz and Hackett (1981) exhibited higher efficacy for traditionally female occupations. They found that the young women’s lack of interest in male occupations was found to be related to their low career self-efficacy expectations. The participants in Kelly’s (1993) study were high school adolescents who completed interest and self-efficacy ratings of twenty vocational occupations. Ten of the nominated careers were female-dominated. Participants indicated their confidence in successfully completing the educational and training prerequisites for the occupations as well as their expectations for entering the occupation. Higher achievers expressed greater efficacy expectations than did lower achievers. The premise that gender influences on career self-efficacy are less influential than academic achievement are in contrast to the findings of Betz and Hackett (1981) who had found that for women, academic achievement was unrelated to career self-efficacy. In their findings career self-efficacy was split on the lines of gender; career self-efficacy for college men was for traditionally male careers, and women for traditionally female careers.
Grant and her colleagues conducted a qualitative study of gifted female students (n=7) from the end of high-school through the college years exploring the issues influencing career-related decisions of these academically talented young college women. Although identity formation was not the focus of the study they found that women with positive identity status, often fostered from childhood through family values, were more likely to be successful in their vocational lives.

The impact of high aspirations, focus and dedication is of particular relevance to highly able adolescents as they embark on making suitable vocational choices (Casey & Shore, 2000). The literature suggests that the relatively poor self esteem exhibited by many highly able girls who lack confidence may predict low career self-efficacy (Eccles 1985; Hollinger, 1984).

Largely as a result of socialization experiences, women fail to realize fully their capabilities and talents in career pursuits due to a lack of personal efficacy (Hackett & Betz, 1981; Kelly 1993; Taylor & Betz, 1983). Women with strong self-efficacy or identity status however, have high self-esteem and tend to be very successful in their chosen careers (Grant et. al., 2000).

**Self-esteem**

William James, often referred to as the father of modern psychology, proposed that self-esteem is linked to success (Seligman, 1995). He theorized that the more success we achieve, the better will be our self-esteem. A century later Seligman has promoted the concept of two levels of self-esteem. The first is a feeling state which would include the emotions of mortification, self-contentment and satisfaction “feeling good. The second would encompass our perceptions of the success of our interaction with the world “doing well”. Seligman (1995) ascertained that the concept of self-esteem which has been used in schools develops only one type of self-esteem, that of “feeling good”. Hence schools are concerned with the personal judgment of worthiness, an appreciation of one’s own worth and importance. Seligman’s view is that personal “feeling good” self-esteem must be integrated with feelings of happiness.
that come from an active experience of success – that of actually doing or understanding one’s capabilities.

Within this framework there appears to be a strong causal link observed between high self-esteem and affirmative vocational decision-making. Those students found to be shy and lacking in self-esteem are more likely to encounter problems in vocational decision-making and generally are characterized as being more vocationally immature (Hamer & Bruch, 1997; Lucas & Wandberg, 1997). Conversely students with positive self-concepts tend to make earlier vocational decisions (Grant et.al., 2000; Greenhaus, 1971; Kishor, 1981).

Preadolescent gifted females have been found to have positive self-esteem (Kerr, 1991a; 1991b Loeb & Jay, 1987; Klein & Zehms, 1996). Gifted young girls appear to be high achievers with optimistic career aspirations in the years immediately preceding puberty. Upon reaching adolescence this had been found to modify). Although an Australian study examining gifted adolescent girls in high school did not examine vocational aspiration, it did find that the highly able females had significantly lower self-esteem than that of their non-gifted cohorts (Lea-Wood & Clunies-Ross, 1995). One explanation is that it is not “cool” to be smart (Gross 1989). This is consistent with the model proposed by Bronfenbrenner (1986) who believes that the peer group within the Mesosystem becomes more influential during adolescence when the young woman looks to her peers for approval and a feeling of commonality (see too, Festinger, 1954).

The feeling of acceptance and validation experienced among gifted peers is potent and highly influential (Webb, 1993). In general gifted young people in dedicated programs for the gifted have been found to have high self esteem (Feldhusen, et. al., 1990). Being educated with other young people who are of a similar ability enables the gifted child to experience affirmation and intimacy (Janos, 1990; Webb, 1993). Young people who are not involved in a curriculum appropriate to their needs and experiences do not have the opportunity to share this positive self-concept related experience (Webb, 1993). As a result of the lack of validation they experience lower self-esteem.
Many gifted young women do not exhibit risk-taking behaviours and do not aspire to high goals (Whitmore, 1980; Webb, 1993): that is, in effect, a reluctance to broaden out of their ‘comfort zone’. Another phenomenon when young women in prestigious positions believe their abilities to be much lower than they really are is referred to as the “imposter syndrome”. The fear of success as well as of failure precludes them from taking the risks necessary to make appropriate vocational choices. Thus gifted young women are confronted by conflict between their identity as gifted students and how to deal with their emerging identity as gifted women (Kerr, 1991a). The argument developed is that many individuals develop internal blocks and lack the confidence to pursue high achieving vocations (Kerr, 1991a).

For those young women who do have high vocational dreams a dissonance between persevering with them and pragmatism where they lower their sights in order to conform to what they feel is appropriate for them will be the result. Consequently they adjust (Kerr, 1991a; Gross, 1993a).

**The influence of external socialisers related primarily to gender.**

Attitudes, expectations and behaviours of parents, peers and teachers are socialising agents which have been found to influence career choice (Eccles, 1985; Hollinger, 1991; Hollinger & Fleming, 1992; Noble, 1989). By an early age young children appear to have clearly defined gender roles based on stereotypes, behaviours and traits which have been fostered by sex role stereotypes, the media and other cultural carriers.

The effect of social stereotypes and social pressures on females’ career plans appears to be considerable as differing environmental experiences influence educational and vocational choices in young people. It has been suggested that the limiting effects of such sex-role stereotyping has a pervasive impact on the developing child’s self-belief system (Hollinger, 1991).
An early study by Rodenstein & Gleckhauf-Hughes (1975) examined the vocational aspirations of three different groups of young women. These were identified as career-focused women, home makers and a group referred to as the integrators. Rodenstein and her colleague were able to identify elements from the women’s adolescence that helped account for their chosen lifestyles and career paths. The career-focused young women often were unaware of or indifferent to parental attitudes toward their career goals. These females chose scientific professions such as physicians, scientists and physicists as well as social occupations. They maintained this interest throughout high school and college, resisting any vocational pressure from their parents and subsequently attaining their goals. Homemakers generally had the support of their parents and tended to select female dominated social occupations. The third group, integrators, also chose social occupations but were similar to career-focused young women in that they too frequently chose scientific occupations. The integrators generally had support from their parents (Rodenstein & Gleckhauf-Hughes, (1975).

Whatever the role of parental impact Kerr (1997) has argued that the vocational guidance of highly able young women still takes place within the context of a society that is ambivalent in its attitude towards women’s aspirations. Kelly’s (1993) study however, found that real progress has been made by gifted adolescent females in conquering the negative effects of gender socializing on occupational self-efficacy and occupational interest (Kelly, 1993). He found that achievement was inversely related to interest in traditionally female careers for young high school females. Gifted young women appeared to be developing occupational interests based more on the actual vocation than gender appropriateness. Kelly’s findings suggest that highly able young women are no longer avoiding vocations seen as suitable only for males and proposed that high achievers are not interested in careers that may limit their professional growth, creative expression and personal financial rewards.
External influencers and feminist theory.

“...but too many of us (women) lose our sense of self-worth early on. Girls are especially vulnerable, often turning from free spirits into ‘female impersonators’ by adolescence (Steinem, 1992 p 36).

The promotion of affirmative action has been a priority in Australian schools over the last ten years. This has meant that Australian schoolgirls have been exposed to feminist values. Feminist theory is an aspect of external influence on women. As such it has a direct impact on the careers perceived by some young women as being acceptable and subsequently pursued.

The feminist position represents females as having a different base for moral judgments than men, and that female existence consists of relationships and interconnections with others tied to feelings of empathy and compassion (Gilligan, 1977; 1982; Rodenstein et. al., 1977). Gilligan argues that the traditionally approved female role in the community is that of the nurturing homemaker. This, Gilligan believes, concurs with the females’ perceived acquiescence and need for external sources of control and praise. Gilligan argues that during adolescence girls tend to compromise themselves by dismissing their inner feelings and aspirations in order to conform to socially acceptable norms. Young women receive contrary views between “compassion and autonomy” and “virtue and power” (Gilligan, 1977, p.491). The result, Gilligan believed, is that young women often distance themselves from their knowledge and “bury themselves and parts of themselves in an intricate, repressed underworld” (Gilligan et. al.; 1990, p.14). On one hand a girl is exhorted to achieve, but conversely she is under constant pressure to be feminine and is discouraged from achieving too much.

Caught in this dissonance young women are likely to hide their abilities and present themselves as someone other than who they are. The contradictory messaging is particularly acute among intellectually able girls where typically they are expected
to develop talent. Gifted students are expected to be active, assertive and exploring. They are encouraged to succeed in the traditionally male dominated careers such as science and medicine. On the other hand, they are still expected to be selfless, nurturing and giving (Hoyt, 1978).

Ambition and aggression in males is tolerated in Western society. A female is criticized however if she is perceived as being too ambitious or aggressive (Gilligan, 1977; Steinem, 1992). Writing in the Australian popular press Wilkie (2001) expressed the view that it is more an issue of perception, that women are seen somehow less capable, that they do not have stamina or emotional toughness to hold top executive positions because of their nurturing, emotional side. If they do display these qualities they are seen as being hard and unfeminine (Wilkie, 2001). Consequently the girl is guided towards a career that will not threaten the society in which she is expected to be a nurturing contributing member.

In the influential Victorian newspaper *The Age Magazine “Sunday Life”* O’Connor (2001) observes that the young girl of today still learns early that love and approval are tied to serving and compliance. O’Connor noted that such an attitude is exacerbated by what appears to be a woman’s tendency to be responsive to the needs of others and her desire to seek harmony whenever possible. The end result of accommodating other people’s needs and her own desires culminate in a chronic loss of self-esteem.

To the current generation of women in difficult economic times the home/career issue is very pertinent. The matter is important firstly, because of the lack of choice it offers to some women and, alternatively, the difficulty associated with the choice for women who do wish to pursue careers. 22 Many of the contradictions that women faced, and were inherent in the feminist literature of the 1960s, no longer appear so sharply defined today (Buckle, 2001). The choices for Australian women are greater and the preconditions are more amenable to women than they have ever been. 23 Women are well represented in the workforce, albeit not

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22 Prue Goward, Australian Sex Discrimination Commissioner *Geelong Advertiser* 12th September.
often in the most prestigious positions. The conflicting demands of work and children remain as a difficulty however. Indeed the home/career conflict has been shown to result in many bright young women delaying their education, or the pursuit of appropriate career placement, until after family needs are met or they may delay having a family altogether. Alternatively they may choose an occupation, such as teaching or nursing that is more compatible with the approved female role (Clark, 1988; Hollinger, 1991; Hollinger & Fleming, 1992; Kerr, 1991a).

The influence of the family.

There is converging and consistent evidence to suggest that family variables are the single most reliable predictor of adolescents’ future occupations (Schulenberg, Vondracek & Crouter, 1984.). The family, first by setting the genetic heritage, and then by creating and fostering the environment in which a child’s abilities develop, has been identified as the most critical component in the translation of talent into achievement (Olszewski, Kulieke & Buescher, 1987). The nature of parental aspirations and rewards, together with assistance in learning provided by the parents are documented steps toward achievement motivation (Tannenbaum, 1997; Rimm, 2000b).

Previous experience and parental attitudes about the importance of subjects have been found to significantly influence attitudes and values placed on course selection and ultimate vocational choice (Brown & Strange, 1981; Weishaar, Green & Craighead, 1981). Any list of important career-choice influences emphasizes the many direct and indirect roles the family plays in influencing children’s vocational decisions (Fleming, 1985; Kerr, 1991a;1991b; Noble, 1989; Olszewski-Kublius & Yasmoto, 1993; Rodenstein & Gleckhauf-Hughes, 1975; Wilson, 1994). The aspirations and expectations that the family holds and transmits are critical to the limits and opportunities perceived by their children (Fleming, 1985). A value system is communicated to children both formally and informally. Many prodigies who achieve world class recognition in their fields were groomed for their success while still in play school. At this level of exceptionality the influences of the home were
found to be far more important than those of the school (Silverman, 1993; Sosniak, 1997).

One aspect of the parent-child relationship can be a negative, however. In their search for identity many highly able adolescents see themselves as separate from parents and family (Buescher, 1991). This need for individuation can pressure a young person to exclude elements from the past that have had an important influence on their lives. To separate from their parents they reject parental goals and values. Included may be the denial and abandonment of talents and abilities as at this stage in their lives these can be perceived as irrelevant to their future (Buescher, 1991). During adolescence many ideals of mother and father may give way to the strong influence of the peer group and other role models who can well be in conflict with the parent’s previous values (Buescher, 1991). Parents who have come to expect a continuation of the positive behaviours displayed by their offspring during pre-adolescence become dismayed by the apparent regressive process experienced by their talented sons and daughters during adolescence (Buescher, 1991).

Early exposure to parental expectations as well as to the expert instruction provided by the family have been found to determine gifted individual’s talent and career paths (Bloom, 1995; Kerr, 1983; 1991a; 1991b; Noble, 1989; Tomlinson-Keasey & Little, 1990; Wilson, 1994). The family’s expectations, values and needs are transmitted through traditional family interaction and impact on the vocational opportunities that the young women perceive (Callahan, 1991; Kerr, 1983; Olzwewski, et. al., 1987). It has also been found that higher levels of parent support during childhood and adolescence are associated with earlier vocational choice (Fleming, 1985; Hollinger & Fleming, 1992; Siebereisen, Vondrecik & Berg, 1997; Raymond & Benbow, 1989; Silverman, 1992; Teese 1997).

Differing results from studies encompassing gifted and non-gifted adolescents of both genders found that young children’s vocational attitudes were much the same as those held by both parents until adolescence. From this finding the evidence diverges. According to Wijting, Arnold and Conrad (1978) change was evident during adolescence when males and females both reflected more of their fathers’
attitudes than those of their mothers’. This is supported by Kerr’s (1991a) study of thirty-one eminent women, finding that girls were likely to be influenced more strongly by modelling of intellectual and cultural pursuits by parents of the opposite sex (Kerr, 1991a). The result is not entirely uniform however as many of the successful women in Rimm’s study reported that it was their mothers who had provided the most support during their upbringing (Rimm, 2000b).

The educational status or level of education of the parent often is depicted as an indicator of the values that parents place on education. Further, relationships between socio-economic status and high vocational aspirations for children have been linked (Super, 1990). Well-educated parents have been found to have high educational and vocational expectations for their children (Tomlinson-Keasey & Little, 1990). According to Super (1990) the occupational level attained by the individual is determined by their parents’ socio-economic status. Silverman (1991) argued that parents with high status careers invest considerable interest in their offspring’s vocational choice. Middle and upper class parents in higher socio-economic groups tend to give their children positive messages about attending college and university, discussing their own college attendance and expectations. This value appears to pervade the home environment and become a part of the child’s own value structure.

Although economic constraints may affect the influence the family, low-income parents can also have high expectations for their children. Notwithstanding the high aspirations the child and parents may have, the pragmatic day-to-day financial limitations of the family can cause long-term planning for college non-viable (Fleming 1985; Olszewski, Kubilius & Scott, 1992; Tomlinson-Keasey & Little, 1990; Schulenberg, Vondracek & Crouter, 1984).

**The influence of teachers and counsellors.**

The first major influence a child confronts away from the home is the school. The impact of decisions or choices by significant others, that is, teachers, plays a
central role in the vocational decision made by gifted young women. Findings from research point to vocational counselling for highly able students as frequently being neglected however (Hollinger & Fleming, 1992; Wilson, 1994). Often school personnel believe that gifted girls are sufficiently able to succeed on their own (Kerr, 1997). Noble (1989) found that gifted young women cannot progress satisfactorily without adequate counselling and advice as they choose career paths (Noble, 1989).

Through positive or negative interactions with gifted students, teachers, especially career counsellors, have an important influence on whether the young women undertake traditional or non-traditional occupations. Female occupations such as nurses and teachers are still viewed by many counselors as more appropriate for young women than a vocation usually dominated by men (Noble, 1989). Currently some young women are still actively discouraged by their secondary school teachers from pursuing non-traditional careers such as technology, it being deemed to be “geeky” and unsuitable for women (Barker, 2000; Teague, 1999).

Anecdotal evidence from gifted women in the United States indicates that they were often less likely to have received adequate career counselling. Career counselors have been seen to confine their guidance to the administration of vocational guidance inventories and to writing letters of recommendation for college entrance (Buescher, 1991; Hollinger, 1991; Kerr 1991; Noble, 1989; Schroer & Dorn, 1986; Walker, Reis & Leonard, 1992). As a result the young women found themselves ill-equipped to make the kinds of choices that would have enabled their effective participation in a complex work force.

This phenomenon is mirrored in Australia. A recent Victorian study by Teese (1997) reported that according to some students, guidance counsellors limit their focus of support to students who are undertaking a professional career. He found that those students who are in curriculum strands unlikely to lead to higher education are the least likely to agree that school counsellors helped them with their vocational planning (Teese, 1997). Contrary to the conclusions of Teese that found teachers and counsellors as having very little influence on career choices of Australian children, another study found role models ranked second after teachers as important influencers of career choice (Price 1998).
Studies also have found that career guidance can vary as a function of school support. This could well be in the areas of funding allocation and curriculum prioritizing. Schools from higher socio-economic higher areas tend to give students more support by employing special career counsellors. Children from more disadvantaged schools are less likely to receive adequate vocational guidance (Olszewski, Kublius & Scott, 1992).

**Wider Social Influencers.**

Along with parents and schools the values of society are conveyed to young people through the extensive influence of the mass media.

**Media.**

Although not fully explored or understood it is arguable that the influence of the media in its various forms intrudes, or is introduced into virtually every home and family especially those in Western society. The influence of the media on our lives and those of high-ability girls can be seen in three key ways; firstly through editorial opinion which professes to convey the traditional values of society: secondly, when reporting female public figures the media often emphasis their femininity, their appearance, marital status and their age rather than professional qualifications and achievements: thirdly through the promotion of media role-models. The manner in which a young woman should conduct herself is presented regularly in almost every form of mass communication. Thus the influence of the “sit-com” is significant, as characters in such programs as “Friends”, “Sex in the City” or “Seinfeld” seldom combine vocational participation and child-raising in programs often designed specifically for young women.

Another function of the media is reporting. Current affairs and news programs frequently refer to the professional childcare versus homecare debate. Although gifted young women understand that they do not necessarily have to make a choice between career and family they often are unsure how to proceed (Silverman, 1986). The impact of maternity leave on the career trajectory of females as well as the lack of adequate child care facilities in many Australian workplaces continues to be lamented.
in the Australian media (Carson, 2001; Wheeler, 2001; Wilkie, 2001). Articles expounding the career-versus-motherhood debate which feature regularly in the current popular press in Australia, attest to this (Carson, 2001; Hellard, 2001; Wheeler 2001; Wilkie, 2001). An Australian study initiated by the University of New England reported that of 14,000 young women in the 18 to 23 age group, ninety-six percent of them did not want to give up a career to be a full-time mother (Wilkie, 2001). The article noted that the same study found that two-thirds of the women surveyed wanted to combine motherhood with working full-time. This revelation is important. Australia is one of the few countries in the world that does not have a national paid maternity leave system. Although individual organizations do have paid leave, approximately 70% of Australian women employees currently have no right to paid maternity leave.

American actor Calista Flockart, in her television role as Ally Mc Beal, is promoted as the archetypical modern young women. In an interview with an Australian womens’ journal she stated, “I guess that’s the big question - can you do both or do you have to choose? To be honest I haven’t made any decision about it. I do want children but I believe you either have a career or you have to have children”. (Wheeler, 2001).

If the messages conveyed by the media are re-affirming the gifted female’s faith in herself and her own beliefs, principles, values and expectations, they communicate that non-traditional vocational choices are acceptable. If media themes simply reiterate society’s traditional expectations of marriage and child raising for the young woman their influence becomes extremely negative for her.

*Peers/friends.*

In general the peer group within the Mesosystem becomes more influential during adolescence. The adolescent looks to her peers for approval and a feeling of commonality (Csikszentmihalyi & Larson, 1984; Festinger, 1954). Even the concept “peer group” however does not imply a uniform and coherent collection of

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adolescents. Instead it comprises a cohort of individuals highly disparate in their values, interests and attitudes (Bronfenbrenner, 1977; Muus, 1988). So it follows that the peer group of the gifted girl would comprise a wide cohort.

Peer acceptance and/or fear of peer disapproval are of particular importance to the young woman during her adolescent years. At this time there is a strong desire to compare and evaluate opinions and abilities with those of contemporaries rather than those of someone vastly different from themselves (Festinger, 1954). The adolescent subculture often includes anti-intellectual values that act to discourage academic achievement. The choice between a commitment to academic pursuit, as against peer pressure to conform to more conventional adolescent values, is a dilemma faced frequently by the gifted young individual (Tannenbaum, 1997). A study by Brode (1980) suggests that gifted young people were more heavily influenced by a need for peer acceptance than were their non-gifted classmates. Thus the adolescents’ reactions to each others’ plans may limit the educational and vocational options considered by gifted females when making important career decisions (Eccles, 1985).

Gifted teenagers experience all the adjustment difficulties associated with the adolescent period. They are just as vulnerable to dissatisfaction with their bodies and social status as their non-gifted cohorts. They will have the same concerns over relationships with siblings and parents. How their experiences impact on their development is examined in studies of personality traits and emotional adjustment of gifted students. Such research concludes that the gifted are as well adjusted emotionally as the average student (Janos & Robinson, 1985; Olzewiski-Kubilius, Kulicke & Krasney, 1988).

Another body of literature suggests that young people with exceptionally high intelligence have more emotional adjustment difficulties with age-mates than with their more moderately gifted peers (Gross 1993a). In the young person’s ratings of their perceptions of peer acceptance level of intelligence appears to be a variable. The modestly gifted students rated themselves extroverted, socially adept and popular, whereas those students with unusually high intelligence found difficulty in relating
intellectually and socially with, and to, their age mates (Dauber & Benbow, 1990; Gross, 1993a).

It has been suggested that a strong socio-economic influence is also evident in peer influence. Socially disadvantaged gifted students often are discouraged from academic attainment by non-gifted peers more frequently than other groups (Olszewski, Kubilius & Scott, 1992). Some talented adolescents, male and female, resort to unacceptable anti-social behavior. This may be construed as an attempt to increase perceived personal status amongst non-gifted critics in their peer group.

For the gifted girl in her search for intimacy and the need for mutual acceptance, the importance of the peer group is considerable (Gross, 1993a). Gifted young females excel at imitation and adaptation and may wish to blend into a group rather than to demonstrate their unusual abilities (Silverman, 1991b). Therefore feeling different and not belonging can be greatly magnified by the reactions of the peer group (Buescher, 1991). If gifted female adolescents have an intellectual peer group at school with which to compare and evaluate opinions and abilities they are able to relate their performance with others of their level of aspiration. Thus similarly talented young people have a need to seek each other out trying to find someone to like and accept them (Gross, 1993a; Feldhusen et. al., 1990; Webb, 1993).

By sharing experiences with one another, young women have been found to become aware of their own influences on their friends’ vocational choices and can make valuable contributions (Buescher, 1991; Buescher & Higham, 1989; Eccles; 1985; Gross, 1989; Noble, 1989; Teese, 1997). Anecdotal evidence gathered from high-ability Australian girls in a selective girls’ high school however suggested a different perspective. It found that gifted young women often were inclined to follow their friends’ career choices. The girls chose the “acceptable” and “harder options” at university rather than their own preferences. It seemed “peer group pressure won the day” (Wilson, 1994, p.134).
Mentors and role models.

Along with friends, mentors can take an important place in the lives of many highly able young women. Mentors facilitate the learning of their young protégés by acting as guides, counsellors, role models and friends. Studies of talented individuals suggest that the influence of mentors can provide the necessary support and encouragement that these young people require in order to make appropriate vocational decisions (Beck, 1989; Casey & Shore, 2000; Kaufmann, 1981). Beck (1989) believed that there was a critical need for female mentors to assist highly able young women to make a productive move towards vocational plans and focused career decisions. Reilly and Welshe (1994; 1995) found that three times as many females as males who had been mentored reported being able to make more informed career decisions.

Although the retrospective anecdotal studies of adult women by Kerr (1991a) found that many gifted women viewed their husbands as mentors it would appear that female mentors also serve as appropriate and important role models. Research investigating accomplished adults reported that parents encourage their daughters to seek female mentors as role models. Women themselves also reported increased self-confidence in their vocational capabilities if mentored by a female who is able to encourage them to pursue their aspirations and achieve their potential (Grau, 1985; Rimm, 2001).

Summary of the review of the literature.

Although the literature pertaining to the vocational choice of gifted young people - especially girls is wide-ranging it is somewhat limited and contradictory. The theories of Bronfenbrenner (1977; 1986) Tannenbaum (1997) and Walberg and Zeiser (1997) all endorse the importance of environment on the development of the individual however. Relationships found within the social and physical environment
of adolescents enable observers to view their interaction as they influence and impact on vocational decision-making.

Occupational choice is a translation of a person’s understanding of self into vocational terms (Hattie & Marsh (1997). This self-understanding or self-concept can be viewed as the adolescent’s belief in his or her ability to complete a task or reach self-efficacy (Bandura 1997).and has been associated with self-esteem. Self-esteem has been identified in the literature as impacting on aspiration, which in turn, plays a decisive role in the diversity of vocational choice (Brown & Strange, 1981). The literature has identified a lack of personal efficacy and self-esteem in women (Kerr, 1983; Noble, 1989). Low self-esteem often resulting in self-doubt has been identified as a major reason young women modify and change their vocational dreams when they perceive their abilities as being lower than they actually are (Gross, 1993a; Kerr, 1991; Noble, 1989). This has been attributed largely to socialisation experiences which, in turn, are linked to career indecision and the unrealisation of capabilities and talents (Hacket & Betz, 1981; Kelly, 1993; Taylor & Betz, 1983).

Although some high-ability young women are able to decide their future careers early on in their vocational trajectory (Kerr, 1991a) the unique characteristics of some intellectually-gifted individuals are associated with indecision and instability of vocational-choice a phenomenon which may cause confusions and anxiety (Buescher, 1991; Kerr, 1983; 1991; Perrone, 1997; Webb, et al., 1982). Feminist writers also have highlighted the contradictory messages received by young women in general (Gilligan 1977). Gifted girls in particular recognise and react to high expectations of parents, teachers, friends and society in general and consequently are exhorted to focus on vocational goals seen as commensurate with their ability. On the other hand the adolescent girl is often confronted with messages highlighting the importance of marriage and children opposed to career ambition (Carson, 2001). This inconsistency may result in the lowering of vocational ambitions when gifted young women become adaptable and accommodating aspiring to moderate status career (Kaufmann, 1981; Kerr, 1991a).
Although the contradictions identified in the feminist literature of the 1960s is less sharply defined today and women do have more choices, they are still confronted with the conflicting demands of work and children (Buckle, 2000). O’Connor (2001) also observed that even today young girls learn that love and approval is tied to serving and compliance.

The literature has identified the critical importance parental aspirations, expectations and values have in the vocational perceptions of young women (Callahan, 1991; Card, et. al., 1980; Kerr, 1991; Olszewski et. al., 1987). In time, the impact of parental influences on gifted young people have been found to modify as other environmental factors within the wider community become increasingly more important (Brode, 1980; Wijting, Arnold & Conrad, 1978).

The school is the first major influence away from the family (Buescher, 1991). Vocational counselling often is neglected in school however and career counsellors who are uninformed about giftedness still appear to contribute to a decrease in female achievement and vocational ambitions (Read, 1991). It would seem that many counsellors still view traditional careers as being the most appropriate for young women (Barker, 2000; Noble, 1989; Teague 1999).

Other important factors within the wider community identified as impacting upon the vocational choices of gifted young women are the peer group, mentors, role-models and the media. The peer group has been identified as a powerful authority within the adolescent sub-culture (Brode, 1980) as the aspirations and values of gifted young women are compared and evaluated with contemporaries (Eccles, 1985; Festinger, 1954; Fleming, 1985). Although it has been observed that high-ability young people who are educated with intellectual peers experience validation and acceptance (Feldhusen, et. al. 1990) highly able young people who do not experience a curriculum appropriate to their needs do not share this positive concept (Webb, 1993).

Another feature found within the wider community which provides vocational support and advice for gifted young women is a mentor (Beck, 1989). Like mentors,
female role-models encourage and enable young women to pursue their aspirations and make vocational decisions (Grau, 1985; Rimm, 2001).

Finally the media can be seen to re-enforce the ideals and values of society as it constantly debated the family/career issue. As a result vocational doubt and uncertainty intensify as the gifted girl endeavours to make appropriate career choices (Carson, 2001; Wheeler, 2001; Wilkie, 2001).

This study has been designed to address the aforementioned internal and external issues affecting the vocational choices of high-ability adolescent girls. These variables have been examined as they interact with the various environments experienced by the subjects.
Chapter Three

Design, Methodology and Procedures

This study is an examination of the variables influencing the vocational decision-making of 124 adolescent girls in Victoria, Australia. Two cohorts of high-ability girls were identified: sixty-three subjects in Study One and fourteen in Study Three through general ability tests and/or by teacher nomination. The forty-nine girls in the control group were classmates of the high-ability girls and were selected at random by the senior co-ordinators of their respective schools.

This is a complex study and the design was built on both quantitative and qualitative data collection over a six year period. Thus the investigation is an accumulation of perceptions and self-reporting comprising questionnaires, formal inventories and interviews.

The null hypothesis is that there is no difference between the two groups, high-ability and control in the variables influencing vocational choice. An hypothesis is consistent with experimental design. The objectives of the study are wider than simply testing a null hypothesis however. They aim to examine the interactions of influences most salient in the processes of vocational choice at the point of time when decision-making is in process.

The core ideas of the study were informed by the literature. These ideas are framed in the following research questions.

- Does self-esteem influence vocational aspirations and early vocational decision-making?
- Is there a relationship between parental occupations and daughters’ vocational choice?
• Does vocational interest measured on the VPI reflect final career choice?
• Is there a change in the relative influence of the variables over the three years?
• Is vocational direction stable over the six years?
• Which variable is perceived by the subjects as having the most influence?

**Study Design**

The investigation is designed to identify possible differences between two groups of young women, high-ability and average. It represents a longitudinal view of the trajectory of vocational decision-making which includes the young women’s perception of themselves and those of significance.

There are three independent studies. Study One (n=112) is quantitative and relevant to hypothesis testing, whereas Studies Two and Three are best described as multiple case studies. The structure of the three studies combines therefore both qualitative and quantitative methodologies. Data gathering included inventories of self-esteem and vocational preference, questionnaires completed by the subjects and interviews with the students.
Figure 3.1. Diagrammatic Representation of Study Design

- PHS = Post High School

As indicated in Figure 3.1 the data collection was progressive, gathered and analysed over a time span of six years. The time span for Study One was three years. There was no data collection during the following two years. This lapse was to enable the subjects to establish themselves in their tertiary studies or employment. The findings from Study One were then incorporated into the structure of Study Two and Study Three. Studies Two and Three were conducted in the sixth year of the investigation.

Studies Two (n=10) and Three (n=14) consist of two kinds of data collection; semi-structured interviews and a questionnaire scored on a Likert scale devised for
the study by the researcher. This questionnaire also included an invitation to make anecdotal comments.

The use of multiple perspectives, theories and research methods is a strength in educational research (Johnson & Christensen, 2000). Although quantitative and qualitative research approaches and methods are complementary often it is not practical to use more than one research method in a single study. The complexity of the current investigation however necessitates research based on different methods. It is noted that relevant published research studies used in the literature review include multi-method research.

Quantitative methods were used to examine the data in Study One (n=112). Quantitative descriptive research encompasses empirical data collections that numerically describe the status of subjects with regard to specified outcome variables (Vockell & Asher, 1995). The advantage of the quantitative approach is that it measures the responses made by a great many people. This facilitates comparison and statistical aggregation of the data (Patton, 1987).

Qualitative methods permit evaluation of select issues, cases, or events in depth and detail. The fact that data collection is not constrained by predetermined categories of analysis contributes to the depth and formation of gathered data. The methodology produces a wealth of detail about a smaller number of people and cases (Patton, 1987). Such a methodology is chosen when no acceptable, valid, reliable, appropriate quantitative method is available; for example when no standard measures are available to study attitudinal changes (Mertens, 1998). This type of research often is often conducted in social situations that occur naturally and is particularly appropriate for this particular investigation which has been designed to examine vocational influencers within the environment of the highly able adolescent girl.

The data from Studies Two and Three have been reported in the form of multiple case studies. Case studies investigate, develop and elaborate on findings. It seems particularly suited to Studies Two and Three, both of which are elaborating on the original quantitative study. Multiple-case study focuses on a group of people as
they confront specific problems. Because case study methodology is descriptive, the perspective is broad and encompasses many variables as they impact upon the subjects. Case study reporting enables thereby the utilization of the rich language of description “to elicit images and analyse situations” (Wilson, 1979 p448). Through case studies the observer gains new insight into the associations being studied fostering new and often deeper understandings of relationships and concepts. Case studies also rely on inductive reasoning (Merrium, 1988) as distinct from the objective nature of quantitative data collection. Because one of the purposes of this study is to develop a model of career trajectories, case study inquiry, which is especially suited to the development and elaboration of theory, is appropriate.

This investigation incorporates data that is complex and anecdotal. The high-ability literature in the area of vocational decision-making also is inconclusive and so the current investigation is exploratory in nature resulting in the collection of great deal of data which, consistent with the practice of quantitative methodology, must be analysed in order to accept or reject the null hypothesis.

When the aim of the research is to determine whether a variable is present or not a rigorous alpha level is appropriate. The nature of the data suggests that tests of significance used should take into account that the variables are not experimental but are behavioural. Indeed the power of a test is determined by the analysis. The conventional choice of a significance level in order to accept or reject the hypothesis is usually an alpha of 0.01-0.05 (Ferguson, 1966). A small alpha is indicative of the caution of scientific investigators against making a Type I error that is rejecting a hypothesis when it is true, or a Type II error when an hypothesis is accepted when it is false. The possibility of making a Type II error increases when a smaller alpha level is employed, that is we increase the risk of accepting a null hypothesis when it is indeed false (Guilford, 1965). The result of too small an alpha is that relatively few non-chance conclusions are observed and few differences and relationships are accepted.

It would seem prudent to look for a balance. A smaller population can yield valid predictions (Guilford, 1965). When externally determined risks are of little consequence such as those in the current study there is a possibility of a suspended
judgment between the probability levels of 0.1 and 0.05. Thus an alpha of 0.1 was used to signify a significant difference between the groups in this investigation.

Study Two is an extension of Study One, its subjects drawn from those participating in the initial data collection. Study Three is an application of the findings from the two earlier studies to a specific educational environment. The multiple case study method used in Study Two and Study Three allowed the researcher to further develop and investigate the hypotheses from the first study. Profiles constructed on each of the highly able subjects in Studies Two and Three (Appendix C) allowed similarities and differences between the subjects to be discussed and highlighted in narrative form.

A subsidiary aim of this exploratory study is to develop a model of vocational choice relevant to highly able female adolescents. It is primarily focused on the variable “high ability”, that is students who have the potential for a high academic achievement. Much of the literature takes a retrospective view from adulthood. Some of the best known studies emanating from the United States of America and Australia are retrospective (Kerr, 1991; Rimm, 2000a), or anecdotal (Cox, 1996; Silverman, 1991; Wilson, 1994). It is possible that investigations which rely on the subjective memory of the subjects after a period of time may not be as reliable as studies when the subjects are actually experiencing the upbringing, social relationships and other influences that contribute to their overall development.

No Australian research has examined the dimensions of vocational decision-making in highly able adolescent girls. This study examines such a process while it is taking place, that is, while the young women are completing the last years of schooling.

**Identification of subjects.**

A feature of this investigation is the diversity within the educational setting of Victorian schools. The educational system comprises government, non-government (independent and church), single-sex and co-educational schools. Currently in
Victoria there are 16025 government schools and 695 non-government schools, the government schools under a single bureaucratic organisation, the Department of Education. The government and the non-government schools have both single-sex and co-educational settings. To ensure that a wide-ranging population was included, students from all four educational settings were invited to be included in the investigation. Ethics approval from the University of Melbourne was applied for and obtained.

In order to collect data in Barwon South-Western Region’s government schools, the researcher sought approval from the Department of Education regional manager Mr Geoff Chandler (Appendix A). In 1994 five government secondary schools agreed to participate. A letter of introduction written by Ms Eve Tindale, president of the Incorporated Association of Registered Schools of Victoria, enabled the researcher to approach non-government (independent) schools (Appendix A). Permission to collect data in independent schools was then sought from the individual principals. Five individual independent school principals were contacted by letter to arrange an interview (Appendix A). The researcher then visited all ten school principals in order to further clarify the investigation and permission was granted.

Due to an anti-testing culture within Victorian government schools at this time, very few schools formally identified high-ability students. The criteria for high-ability for the purpose of this investigation was discussed with school personnel so that the sample cohort throughout the ten schools involved in the study was as homogeneous as possible. Selection of the control group was based on teachers’ judgement. All of the 112 students nominated were included in the study.

The subjects in Study One comprised 112 adolescent girls enrolled in Grades 10, 11 and 12, in ten post primary schools within in a 100 kilometre radius of Melbourne in the state of Victoria. In the first year of the study the students were enrolled in three year levels Grades 10, 11 and 12. The following year the profile was Grades 11, 12 and first-year post-secondary education. The third and last year of the longitudinal study reviewed Grade 12, first and second years post secondary
education (Figure 3.1 p.52). The three year levels were selected to reflect a representative sample of adolescent girls in the wider population as they progressed from senior school into the first two years of tertiary education.

Five government and five non government schools participated. Of these five were single-sex and five were co-educational schools. Such schools were representative of a wide demographic. Subjects from working class, migrant and more affluent homes were included in the sample.

Twenty one high-ability girls attended government schools and forty-two girls in independent schools. Twenty-seven of the high-ability subjects were enrolled in single-sex schools. The control group comprised forty-nine average-ability subjects who were school classmates and chronological age peers of the gifted girls and selected at random by their respective year co-ordinators. Seventeen average-ability girls were enrolled in government schools and thirty-two in non-government schools. Of these, nineteen girls were enrolled in single-sex schools.

Sixty-three of the subjects had been identified within the previous twelve months as being gifted and/or high achieving by their performance on standardised tests and/or nomination by teachers. Teacher selection took into account the student's ability to complete higher order cognitive tasks at a level significantly beyond their chronological age peers. It should be noted that those students who were nominated by their teachers were perceived as being able to interface extremely successfully with the curriculum. In view of this characteristic the “giftedness” of these particular students at Victorian Department of Education secondary schools was measured by a curriculum driven assessment for achievement. At this time it was not based on standardised norms.

The second, qualitative investigation was carried out from July through to December 2000. All ten young women in Study Two had taken part in the quantitative longitudinal study (Study One) spanning three years. The researcher was able to access the school records of ten subjects who all responded positively to the researcher’s request for them to participate further in the investigation. The request was made by telephone or email. The researcher selected these particular young
women for two significant considerations. The girls had all been educated in both single-sex and co-educational schools during their secondary education and they had all been formally identified as highly able in primary (elementary) school on tests of general ability and attainment.

Study Three took place in April 2000, the final year of the investigation. Fourteen high-ability students from a single-sex government secondary school in a large regional city in Victoria, Australia, were the subjects of a qualitative investigation in the form of multiple-case studies. With the advent of the “Bright Futures” policy in Victorian schools, a small number of secondary schools had elected to trial an accelerated program for Grade 7 students. Students for the Accelerated Learning Program (ALP) were selected on the basis of their results on tests of attainment and non-verbal reasoning ability at the end of Grade 6. They are able to complete the first four years of secondary school (Grades 7-10) in three years. At the end of Grade 10 the students progress into Grades 11 and 12 which comprise the Victorian Certificate of Education (VCE). The fourteen participants in Study Three were enrolled in Grade 12 as part of the ALP accelerated class in one of the trial schools. These students were selected by the co-ordinator of the ALPs program to be part of the current investigation.

Collection of data.

There were three phases of data collection in Study One (see Diagram 3.1 p52). In the first year of the investigation the researcher visited all the schools which were to be involved in the investigation. The students from both groups, high-ability and control, enrolled in Grades 10, 11 and 12 were administered the Self-Esteem Inventory (Coopersmith, 1981), the Vocational Preference Inventory (Holland 1985) and the DMQ (Appendix B). The researcher administered the instruments to each school group during one regular 40 minute class period. Although there was no time limit imposed, no student took longer than forty minutes to complete all three instruments. So that anecdotal evidence could be included, the girls were encouraged to write comments in the margin of the DMQ. In the second year of the investigation 88% (n=99) of the questionnaires were returned and in the third year 70% (n=79).
During the next two years the DMQ was posted to all the students in the study together with a stamped self-addressed envelope. The students were requested to complete the questionnaire and to add anecdotal comments.

In Study Two there were essentially four phases of data collection: three phrases of Study One plus a final semi-structured interview three years later. The Decision-making Questionnaire (DMQ), Holland’s VPI (VPI) and the Coopersmith SEI (CSEI) were administered to the students in the first year of the original study while they were in the final three years of high school. The DMQ was used to gather data on demographic variables relating to vocational aspirations and the relative importance of the social influencers of mother, father, teachers and peers. During stages two and three, that is the second and third years of Study One, this questionnaire only was posted to the students in order to examine patterns and trends over time.

In the second year of Study One school-based students were in Grades 11 and 12. The previous year’s Grade 12 students were by now in the first year of tertiary education. In the final year of Study One the only school-based students (n=25) were in Grade 12. The remaining students were in the first or second year of tertiary education, in the workforce or unemployed. Phase four of the study was conducted three years later when all of the students had entered tertiary education (university) or were employed (see Diagram 3.1 p 52). A semi-structured interview (Appendix B) was conducted with the subjects (N=10) by telephone or in person by the researcher. This was designed to determine current tertiary majors, degree completing status, school climate and retrospective views on the subjects’ vocational decision-making trajectory.

In 2000 the researcher visited the school involved in Study Three. The students were administered the CSEI, the VPI, and a modified DMQ. Consistent with the exploratory nature of the investigation was the option of a DMQ which incorporated findings of Studies One and Two. In Study One the issue of female role-models was addressed but only in relation to the media. In the years immediately
preceding Study Three Victorian schools had actively pursued a policy of equal opportunity and affirmative action. It seemed appropriate to include more questions relating directly to female role-models in a wider frame of reference in Study Three.

The following instruments were used in the collection of the data.

**Coopersmith Self-Esteem Inventory**

Self-esteem (self-concept) was measured using the CSEI (Coopersmith, 1987). The CSEI is based on a unitary notion of self-concept that the author defined as a set of attributes and beliefs that a person brings with him/her self when facing the world (Coopersmith, 1967). It was designed to measure attitudes in social relationships, relationships with the family and the academic world. According to the Manual (1987) self-esteem refers to the appraisal a person makes, and customarily maintains of him-or herself: that is, overall self-esteem is an expression of approval or disapproval indicating the extent to which a person believes him-or herself competent, successful, significant and worthy. By administering the SEI to a group a general assessment of high, medium or low self-esteem can be obtained.

The school form of the CSEI is used with students aged eight through to fifteen. It yields a total score for overall self-esteem as well as four separate subscales. The subscales identify variations in self-esteem within different areas of experience. The Inventory (School Form) presents 58 statements in the same vein as, “I'm popular with kids my own age" to which students respond to a dichotomous choice “Like Me" or "Unlike Me". Four subscales are obtained: General (26 items), Self-Peer Relations (8 items), Home (8 items), and Academic (8 items). There is also a lie scale which, when high, indicates extremely socialised response sets suggesting defensiveness in a student's answers. The author of the measurement believed that in such instances the inventory might be invalid.

Although the CSEI has been criticised by some evaluators of self-concept measures because they believe it exhibits only moderate reliability and meagre support of validity (Keith & Bracken, 1997) it was the preferred tool of measurement
in research findings referred to in the review of the literature. It was also used by the author of this investigation in an earlier review of self-esteem in adolescent gifted girls (Lea-Wood & Clunies-Ross 1995). It is for these reasons the CSEI was used to measure self-esteem in this study.

**The Vocational Preference Inventory (VPI)**

“The choice of an occupation is an expressive act which reflects a person’s motivation, knowledge, personality and ability” (Holland 1985). In the current study the VPI was used;

- To identify vocational interests between the groups
- To ascertain the relative importance of the relationship between interests and final career choice.
- To examine the relationship between high scores on the *masculinity/femininity* (*M/F*) scale and non-traditional career choice.
- To compare the parental career choices with those of their daughters.

Used extensively by vocational counsellors to investigate career behaviour, in this investigation the VPI has been used to identity vocational interests. The eleven-category scheme assesses personality/occupational types in a theory of careers (Holland 1985). An individual’s personality is matched to appropriate career options. Holland’s theory is based on the assumption that most people can be categorized into one, or a combination of six personality types; *realistic, investigative, artistic, social, enterprising and conventional* (RIASIC) which reflect six model environments. Because this investigation is not examining personality only two areas within the personality scale were examined in view of their relevance to and impact on the vocational choices of young women. These were the *Masculinity/Femininity* and *Status* scales.

If an occupation involves explicit, ordered or systematic manipulation of tools or machines and is not involved in educational or social endeavours, it is categorised as a *Realistic* occupation. Manual, mechanical, agricultural, electrical and technical
competencies are usually involved in or developed by workers in these occupations. For example, the occupation of hairdresser would be categorised as being Realistic.

*Investigative* occupations involve observational, symbolic, systematic and creative investigation or physical, biological and cultural phenomena for the purposes of understanding or controlling them. Scientific and mathematical competencies are common among workers in these occupations thus scientists would be included in the *Investigative* vocations.

The manipulation of physical, verbal or human materials to create art forms and products is categorized as an *Artistic* occupation. Photographers and musicians would be included among *Artistic* vocations where competencies in language, art, music, drama and writing are common.

*Social* occupations involve dealing with people to inform, train, develop, cure or enlighten them and has little to do with manipulation of materials, tools or machines. Interpersonal and educational competencies are characteristics of people choosing *Social* careers. Psychologists, teachers and nurses are classified as being in a *Social* occupation.

When people are manipulated for organizational goals or economic gain, the occupation is categorized as an *Enterprising* vocation. Vocations in public relations and management would be examples of *Enterprising* careers where leadership skills and interpersonal and persuasive competencies are required.

Explicit, ordered and systematic manipulation of data, such as keeping records, filing materials, reproducing materials, organizing written and numerical data according to a prescribed plan, are the skills required in occupations categorized as *Conventional*. Accountants, data processors and other office workers are deemed to have *Conventional* vocations.

The Australian Standard Classification of Occupations (ASCO) Working Draft 1983, which matched Holland codes to specific occupations, was employed to identify the specific vocations chosen by each of the subjects. The typology in the
ASCO draft provides additional descriptive information about the occupations (Gurney, 1986). The researcher completed this match by hand.

**Decision-Making Questionnaire (DMQ).**

In addition to these well known, validated and reliable instruments was a questionnaire developed by the author to address the variables associated with vocational choice as suggested in the literature (Appendix B). It was constructed to identify and track those variables influencing vocational decision-making. A progression was identified from the variables of perceived *interest* of the individual in the decision-making of the girls through to perceived *influence* and then actual occupational *suggestions* and *views*.

Diversity in reporting is preserved so that the “voices” referred to by Guba & Lincoln (1989) are not lost. As such, the questions posed in the DMQ are a process in which the anecdotal comments added by the subjects have been invited. Because the study is exploratory, this instrument is an initial attempt to examine aspects of career choice while listening to the sentiments of the young women. The questions on the DMQ set out to address the following areas of focus:

- **vocational aspiration - questions 3, 4 and 5.**
  For example: I will do further study when I leave school. 1-2-3-4-5

- **interest of mother, father, teachers and friends questions 6, 7, 8, 9, and 12.**
  For example: How much *interest* has been taken in your career decisions by 6) Your mother? 1-2-3-4-5

- **influence of mother, father, teachers and friends-questions 10, 11,12,13, 24 and 25.**

- **influence of the media-question 18.**
  For example: How much *influence* have female role-models in the media had on your career decisions? 1-2-3-4-5
The demographics of the two different groups were determined by examining the socio-economic status of the parent’s occupation. Such data gives a background on which the similarity of the population was established. Questions pertaining to these formed part of the DMQ.

**Data Processing and Data Analysis.**

The aim of Study One was to identify differences between the two groups, high-ability and control. The data collection was progressive and gathered over a time-span of six years. The CSEI, VPI and DMQ were scored by the researcher and entered into SPSS 6.0. The semi-structured interviews were compiled into case-studies. Analyses were carried out using both parametric and non-parametric methods. Frequency counts, cross tabulations and *t*-tests were used. The use of frequency tables was consistent with the fact that certain data was essentially observational and descriptive. Cross tabulations were used to examine relationships and *t*-tests were undertaken where appropriate to determine the significance of the differences between groups.

The aim of Study Two was to obtain a more comprehensive view of factors impacting on vocational choice which may occur over time and test the stability of the vocational decisions made by the highly able girls. As such it is an extension of Study One.

Overall the analysis in this second study depended on an interpretation of aggregated data which was gathered using a combination of analytic techniques collected from different sources. This form of data management whereby different kinds of evidence are examined for corroboration or variance when analysing the data is known as triangulation (Lundsteen, 1991).

The analysis of data was in the form of a matrix based on the information gathered during Studies One and Two. The semi-structured interviews and original data from Study One were integrated and synthesized into case histories. A matrix
executed by the researcher enabled a triangulation of the data, both quantitative and qualitative, to be analysed. The researcher designed a colour-coded chart so that the data from Study Two could be compared to that of the Study One (Appendix D). Different cases were compared and patterns which emerged were then observed. The data were coded to determine constant themes and to identify important influences and trends across a time frame. Anecdotal commentary was selected for the insights they offered in relation to the quantitative material.

The aim of Study Three was to enable the findings of Study One to be applied a specific cohort. The information collected in Study Three was analysed and presented in the form of case-studies (Appendix C) and a matrix (Table 5.1 p 130). As such, it is an explication of Studies One and Two.

Hence a unique concentration on the specific factors influencing vocational decision-making, suggested by the literature, has been addressed through three interrelated studies based on quantitative and qualitative data collection. These have been designed to examine, in a systematic way whether the variables are peculiar to high-ability young women or women in general and which, if any, of these identified variables is the most important.
Chapter Four

Study One: Results and Discussion

The aim of this exploratory study is to examine the factors that influence the vocational choices of highly able adolescent girls at the actual point of considering and making vocational decisions. To do this both quantitative and qualitative techniques have been employed. Study One represents quantitative methodology.

Much that has been reported in the review of the literature is retrospective and based on the biographies of eminent and/or successful women for example, the studies of Kaufmann (1981), Kerr (1986), Tomlinson-Keasey and Little (1990). Such a literature has identified clusters of both external and internal variables as most salient: these parents, teachers, peers and role models, together with the internal dimensions of self-esteem, vocational aspiration interest and influence. In the light of this anecdotal literature the aim of Study One is threefold:

- To examine, in a systematic way, the presence of those external and internal variables identified in the literature,
- To ascertain whether they are specific to high-ability young women or to young women in general,
- To ascertain which, if any of these identified variables, is the most important.

Self esteem has been identified by the Coopersmith SEI and vocational interest by Holland’s VPI. The dimensions of aspiration, interest and influence were addressed by the DMQ and examined within the framework of the research questions. The data collection was progressive and gathered over a time span of three years. Frequency counts, cross tabulations and $t$-tests were used to describe observations, explore relationships and identify differences between groups on variables selected within the study.
**Hypothesis**

For the quantitative section of this investigation, namely Study One, the following null hypothesis was investigated.

“There is no difference between the two groups of young women, one defined as high-ability, the other control, in the variables influencing vocational choice examined in this investigation”

This enquiry thus addresses the following five questions.

- Is there a difference between the groups in the influence of self-esteem on vocational aspirations and early vocational decision-making?
- Is there a difference between the groups in the relationship between parental occupations and daughters’ vocational choice?
- Is there a difference between the two groups when vocational interest is measured on the VPI and does it reflect final career choice?
- Is there a change in the relative influence of the variables between the groups over the three years?
- Is there a difference in which variable is perceived by the subjects in each group as being the most important?

**Data Collection and Analysis.**

Data were collected in three stages. The CSEI, the VPI and the DMQ were administered to the subjects in Grades 10, 11, and 12 in both the high-ability and control groups in the first year of the study. The DMQ only was posted to the subjects in the following two years. In the third year of the study only Grade 12 remained at school. The other subjects were completing further education, were within the workforce or were unemployed.

The total number of families involved in the study was 112. Of these, 63 had daughters in the highly able cohort. The control group comprised 49 families. The
subjects were selected from two school systems, these being independent (private) schools and government schools. Within these two systems were two settings; co-educational and single-sex.

The DMQ was used to establish demographic data on the families. Questions relating to the birthplace of the parents as well as their occupations were asked, the purpose being to establish the homogeneity of the population. Questions directly associated with socio-economic status were not included, firstly because the respondents to the questionnaire were adolescent school girls and possibly unaware of their parents financial affairs, and secondly because the focus of the study is career choice. Hence questions related to income were perceived to be distracting and/or inappropriate. Because the subjects attended school in middle class suburbs in a capital city and a regional city, it is reasonable to assume that the subjects’ families would be classified as being within the lower to upper middle class range of the Australian population.

Results

Overall homogeneity was assessed by the variables of parental birthplace and occupations and there were marked similarities in the two groups. Australian born mothers in the sample group comprised 66% (n=42) compared to 73% (n=36) of the mothers in the control group. Within the sample mothers born in England comprised 9.5% (n=6) compared to 8.2% (n=4) of the control mothers. Of those mothers born in Asia, 9.5% (n=6) came from the sample group and 6.1% (n=4) from the control group. The birthplaces of other mothers in the sample were Europe (n=3), USA (n=3), New Zealand (n=2) and Ireland (n=1). Australian born fathers comprised 65% (n=41) of the sample group compared to 85.7% (n=42) in the control group. Asian born fathers comprised 7.9% (n=5) of the sample group of fathers compared to 2.0 % (n=2) of control cohort fathers. Other birth countries represented in the sample were England (n=5), Europe (n=5) and USA (n=1).

Within the sample 34.9% of mothers were defined as having careers classified as professional by the Australian Standard Classification of Occupations (ASCO)
compared to 38.8% in the control. Of the sample, 14.3% of parents were clerks compared to 12.2% of the control parents. Unemployed (home duties) mothers in the sample group made up 14.3% (n=9) not at all different from 18.4% (n=9) in the control group. Fathers’ occupational status was not dissimilar. Of the fathers in the sample group, 25.4% were in managerial positions compared 24.4% of the control fathers. Professionals comprised 42.9% of sample fathers compared with 40.8% of the control fathers. Occupations in trades accounted for 9.5% of the sample fathers and 14.3% of the control fathers.

On the basis of these percentages it was concluded that the two groups demonstrated similar characteristics. The exception was on the criteria of paternal birthplace.

**Self-esteem, aspiration and vocational decision-making.**

The School Form of the CSEI was used to identify self-attitudes in four areas, social, academic, family and personal areas of experience. The school form of the CSEI yields a total score for overall self-esteem as well as four separate score for the subscales. The subscales for each area are Social Self-Peers, Home-Parents, School-Academic, and General-Self. These subscales identify differences in self-esteem within different areas of experience.

To compare the means of the sample and control in each subscale of the CSEI, a $t$-test for independent groups was used, the results shown in Table 4.1 p67.
Table 4.1 Summary of \( t \)-tests based on self-esteem.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Mean D</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen</td>
<td>17.365</td>
<td>4.956</td>
<td>0.624</td>
<td>18.5510</td>
<td>5.046</td>
<td>0.721</td>
<td>-1.1859</td>
<td>110</td>
<td>-1.55</td>
<td>.215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>5.5714</td>
<td>2.077</td>
<td>0.262</td>
<td>6.1837</td>
<td>1.692</td>
<td>0.242</td>
<td>-.6122</td>
<td>110</td>
<td>-1.68</td>
<td>.097</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>4.4921</td>
<td>2.409</td>
<td>0.303</td>
<td>5.6122</td>
<td>2.262</td>
<td>0.303</td>
<td>-1.1202</td>
<td>110</td>
<td>-2.51</td>
<td>.014</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>5.0635</td>
<td>2.054</td>
<td>0.276</td>
<td>4.7755</td>
<td>2.054</td>
<td>0.293</td>
<td>.2880</td>
<td>110</td>
<td>.71</td>
<td>.480</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>64.2857</td>
<td>18.039</td>
<td>2.273</td>
<td>70.2857</td>
<td>18.959</td>
<td>2.694</td>
<td>-.6000</td>
<td>110</td>
<td>-1.71</td>
<td>.090</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes \( p<0.1 \)

The subscale General self-esteem relates to self-attitudes in general. As indicated in Table 4.1, no significant difference between the groups was found.

The sub-scale Social self-esteem is representative of the individual’s perception of self when measured as a construct of societal values and expectations. Card et. al., (1980) reported that early socialization by parents, teachers and others has been shown to have a profound impact on women failing to reach their full potential when predicted achievement is compared with actual achievement.

Self-attitudes that relate to the atmosphere of home and family are represented in the sub-scale Home self-esteem; that is, the self-esteem generated by the immediate family as distinct to that of the individual’s perception of self. As shown in Table 4.1, the Social self-esteem score was significantly different between the two groups, the sample having lower Social self-esteem. It would be concluded from this finding that the highly able adolescent girls in this study may have poor home self-esteem compared to their average classmates as a result of experiencing perceived parental expectations. Such an interpretation would be that the average ability subjects do not have the same degree of perceived parental anticipation of success imposed on them. As indicated in Table 4.1 there was a significant difference between the groups in the Home self-esteem sub-test, the control group having a higher score.

The School sub-scale of the CSEI represents issues relating to self-attitudes in the environment of school, and toward learning. Academic perceptions of
self or how one perceives oneself as a student is a construct of the school environment (Holland, 1985). The School self-esteem of the high-ability group was not significantly different to that of the average control cohort. The findings are shown in Table 4.1 and are reflective of how the subjects perceive themselves interacting within the academic setting.

It is recognized in the literature that gifted students sometimes have more positive ‘academic selves’ than they do ‘social selves (Davis & Rimm, 1985)’. A dichotomy exists between being academically competent and achievement consistent with their academic ability, or being popular. Another possible explanation would suggest that the high-ability cohort did not perceive their academic results to be sufficiently good enough to elevate their self-perception.

It has been proposed that self-esteem is associated with effort and achievement (Seligman, 1995). It is well documented that students who are intellectually able often underachieve at school (Feldhusen et. al., 1989; Tannenbaum, 1983). Because many of them learn to ‘coast’, never venturing out of their comfort zone, they fail to reach their full potential. If ‘effort’ is not associated with ‘achievement’ then, consistent with the logic of Seligman, self-esteem will be adversely affected because they achieve less.

A sizable minority, 42.9% of the students in the sample, were educated in single-sex schools. Given that these could represent different social and educational environments there is some expectation that a difference be evident. No significant difference was found between the highly able young women in single-sex schools (n=27) and those girls who were being educated in co-educational schools (n=36) in Total self-esteem (t = 36, p=.720). A significant difference was found however in the area of School self-esteem (t = 1.68, p=.09). For the control group however there was no difference in School self-esteem between the two school settings. The possible rationale from this finding is that in single-sex schools girls feel less compromised intellectually as they do not have to contend with perceived male approval or disapproval. In addition, girls’ schools in Australia generally promote affirmative action policies.
Overall a significant difference was found in Total self-esteem scores. The girls identified as having average intellectual ability had significantly higher self-esteem than those in the sample. This phenomenon could be attributed to the affirmations and commonalities of a wider peer group experienced by the average schoolgirls educated in the mainstream. On the other hand the higher parental expectations and the demeaning of intellectual abilities in order to gain social acceptance may account for the lower scores in the high-ability cohort.

High self-esteem also is acknowledged as being a predictor of high vocational aspirations (Casey & Shore, 2000). So that this premise could be examined, scores in the upper quartile (>= 75) on the CSEI which are indicative of high Total self-esteem, were extracted. High vocational aspirations were indicated by the response of “most important” to the questions relating to vocational aspiration on the DMQ. As shown in Table 4.2 the scores of nineteen students from a possible sixty-three in the sample fell into this range (30.15%). Within the control group, the scores of twenty-four students from a possible forty-nine indicated high self-esteem (48.97%).

<table>
<thead>
<tr>
<th>Table 4.2 Means, Standard Deviations and percentages for students with self-esteem scores =&gt; 75.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (n=19)</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>%</td>
</tr>
<tr>
<td>(30.15%)</td>
</tr>
</tbody>
</table>

High self-esteem and early vocational decision-making were observed over the three years using frequency data. The frequencies for the sample and control groups were examined separately, and are shown in Table 4.3.

<table>
<thead>
<tr>
<th>Table 4.3 Percentage of students having self-esteem scores =&gt;75 who made early vocational decisions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Year 1</td>
</tr>
<tr>
<td>Year 2</td>
</tr>
<tr>
<td>Year 3</td>
</tr>
</tbody>
</table>
The number of students who had made a vocational decision was lower for both groups in the second and third year of the investigation. Nine in the sample cohort out of a possible nineteen had made a career decision in the first year of the study. Ten high-ability students had made no firm decision. Similarly, of the girls in the control group whose Total self-esteem score was in the fourth quartile approximately half out of a possible twenty-four had made a career decision in the first year of the study. Thirteen students within the control group having high self-esteem had made no decision, or were undecided.

There appears to be very little difference therefore between the groups when the relationship between high self-esteem and vocational decision-making is observed. In this investigation high-self-esteem did not predict early vocational choice for either the sample or the control group.

The literature reporting that students with positive self-esteem tend to make earlier vocational decisions suggests that the converse might be true: students with low self-esteem would have difficulty making an early vocational choice. So that the relationship between self-esteem and vocational decision-making could be viewed in this wider frame of reference, the frequency tables for all subjects having “low to medium” (= <50) Total self-esteem scores were identified and their decision-making observed across the three years.

Table 4.4 Percentage of students having self-esteem scores <= 50 who made early vocational decisions.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>2</td>
<td>16</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Year 2</td>
<td>2</td>
<td>16</td>
<td>3</td>
<td>37</td>
</tr>
<tr>
<td>Year 3</td>
<td>3</td>
<td>25</td>
<td>5</td>
<td>63</td>
</tr>
</tbody>
</table>

Those girls with low to medium Total self-esteem in the sample (n=12) fell within the low esteem category. Eight of the control group had medium to low self-esteem. In year one, only two girls in the sample, out of the possible eight with Total self-esteem scores below 50 had made a career decision. Six students out of the possible six from the control group with Total self-esteem scores of less than 50 had
made a firm career decision. No student in the control group said that they were undecided; they elected either yes or no.

These results offer a far from simple view. They indicate that for females with high self-esteem there appears to be little difference between the groups in the relationship between self-esteem and early vocational choice. However when examining students with poor self-esteem those in the control group still appear able to make viable vocational decisions whereas the high-ability group were not.

**Longitudinal implications in decision-making.**

The reporting of the data is both cross-sectional and longitudinal. The information pertaining to vocational decision-making is presented graphically in Figure 4.1. Study One spans three years. The intent of the longitudinal aspect is to observe change in decision-making. In considering these results, attention is drawn to the missing data in the third year of the study. A sample cohort of 46 (less 17) and a control group of 35 (less 14) necessitates these results be viewed with prudence.

Bar Charts have been examined to gain further insight into the results. These results are independent of self-esteem scores.

*First year of study.*

As shown in Figure 4.1 the control cohort enrolled in Grades 10 and 11 appeared able to make earlier vocational decisions than did the sample group in the first year of the investigation.

*Figure 4.1 Comparison of vocational decision-making between the groups in the first year for both the sample and control (%)*
Within the Grade 10 group 32% of the sample compared to 40% of the control group had decided upon a vocation. In the Grade 11 group 31% of the sample compared to 66% of the control group had decided on a career. In Grade 12 the groups were very similar in composition, 59% of the sample and 57% of the control group had made a vocational choice.

Second year of study.

A steady increase in the vocational commitment within the highly able group can be seen from the Bar Graph presented in Figure 4.2. Further, from year one to year two there is a change in the relative position of the two groups. Within the control group the frequencies indicate an increased level of career indecision while a firmer position was taken by the sample girls.

Figure 4.2 Comparison of vocational decision-making between the in the second year for both the sample and control (%).

Of the Grade 11 sample 42.9% were decided about their career choice compared to the year before where 32% had decided. Of the control cohort 80% had decided on their vocational trajectory compared to 32% the previous year. Of the Grade 12 sample, 60% had decided on a career compared to 32% the previous year. Of the control group 57.1% had decided on a vocational choice although the previous year 66.7% of the respondents said that they had decided on a career. The shift in
vocational decision-making over the two years indicates the steady increase of the sample group.

**Third year of study.**

**Figure 4.3 Comparison of vocational decision-making between the groups in the third year for both the sample and control %.'**

As shown in Figure 4.3, by Grade 12, 48% of the sample had decided upon their vocation compared to 42.9% the year before and 32% the first year. This compares with the instability found in the decision-making of the control group in the other years. Of the control group 40% had made a definite vocational choice compared to 42% the year before and 32% in year one of the study.

These frequencies identify a linear rise in number toward ultimate vocational choice within the sample group. Of the Grade 12 control group, 40% said they had made a definite career decision compared to 80% the previous year and 40% in the first year. These results would suggest that by Grade 12 there was a greater degree of career indecision within the control group. The apparent indecision among average girls may be attributed in part to their not receiving sufficiently high scores in their assessment for the Victorian Certificate of Education (VCE). Due to the lack of a formal examination process in Australian government schools until Grade 11 students can develop a somewhat unrealistic view of their achievement. Less than expected results for the control group in this study would preclude them from many of the career options they once assumed feasible.
Vocational interest as a predictor of final career choice.

The purpose of this study was to examine vocational decision-making across time as a means of identifying relevant influences. Matching interests with the characteristics required by specific occupations has a long tradition in vocational psychology. Study One aims to identify the association between the role of vocational interest as measured by the Vocational Preference Inventory (VPI) and final career choice. Data from the VPI also was used to determine a relationship between parental occupations and the final career choice of their daughters.

To complete this analysis required identifying specific occupations as being consistent with the broad Holland RIASEC categories. Occupational codes established in the Australian Standard Classification of Occupations (ASCO) document were used to match corresponding Holland categories.

Analysis of occupational data.

The VPI is comprised of six scales relevant to vocational interest and eight dimensions relevant to personality. Because this study is analyzing interest in vocational choice eight scales of the VPI index will be reported. These are the six interest-based scales of Realistic, Investigative, Artistic, Social, Enterprising and Conventional and the personality scales of Masculinity/Femininity and Status. The two personality scales will be reported as they are relevant to specific aspects of this investigation.

The VPI professional manual has been the source of defining high scores. High scores indicated T-scores above 60 and suggest high interest in the vocational area nominated by the inventory (Holland 1985). Descriptive statistics based on the raw scores for each VPI category are specified in Table 4.5 p 75.
Table 4.5 Means, standard deviations, percentages and standard errors of T-scores (=>60).

<table>
<thead>
<tr>
<th>Holland categories</th>
<th>Sample (n=40)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Control (n=32)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Mean</td>
<td>Std dev</td>
<td>SE</td>
<td>N</td>
<td>%</td>
<td>Mean</td>
<td>Std dev</td>
<td>SE</td>
</tr>
<tr>
<td>Realistic</td>
<td>6</td>
<td>9.6</td>
<td>6.33</td>
<td>1.033</td>
<td>0.422</td>
<td>7</td>
<td>14.2</td>
<td>7.00</td>
<td>1.732</td>
<td>0.655</td>
</tr>
<tr>
<td>Investigative</td>
<td>15</td>
<td>23</td>
<td>11.60</td>
<td>2.098</td>
<td>0.542</td>
<td>7</td>
<td>14</td>
<td>9.571</td>
<td>1.618</td>
<td>0.612</td>
</tr>
<tr>
<td>Artistic</td>
<td>4</td>
<td>6.4</td>
<td>13.00</td>
<td>1.414</td>
<td>0.707</td>
<td>3</td>
<td>6</td>
<td>13.00</td>
<td>1.304</td>
<td>0.583</td>
</tr>
<tr>
<td>Social</td>
<td>5</td>
<td>8</td>
<td>11.80</td>
<td>1.304</td>
<td>0.583</td>
<td>5</td>
<td>10</td>
<td>12.00</td>
<td>1.304</td>
<td>0.583</td>
</tr>
<tr>
<td>Enterprising</td>
<td>7</td>
<td>12</td>
<td>11.00</td>
<td>1.633</td>
<td>0.617</td>
<td>7</td>
<td>14</td>
<td>10.429</td>
<td>0.796</td>
<td>0.369</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>5</td>
<td>10.00</td>
<td>1.00</td>
<td>0.577</td>
<td>3</td>
<td>6</td>
<td>7.667</td>
<td>1.155</td>
<td>0.667</td>
</tr>
</tbody>
</table>

Across the six categories the distribution was not dissimilar. As shown in Table 4.5 twenty-nine of the subjects had high raw scores suggesting an interest in Investigative vocations. This held true for both groups but was more pronounced in the sample. Vocations within the Enterprising category were the next most highly represented for the sample. Realistic, Social, Artistic and Conventional vocational interests were evenly and thinly spread for both groups.

Of the number of girls falling into the categories within the sample cohort, 9.6% of the students had high T-scores in Realistic vocational interests compared to 14.2% within the control group. Of the sample 23.8% had high T-scores in Investigative vocational interests, 14.2% of the control cohort. Artistic vocational interests within both groups were very similar. Artistic interests were nominated by 6.4% of the sample and 6% of the control group. A high interest in Social occupations was held by 8% of the sample compared to 10.1% of the control cohort. Interests in Enterprising vocations were nominated by 11.2% of the students in the sample who had high T-scores.

This study only examines two aspects of personality identified in the VPI, M/F and Status. These aspects of personality associated with gender and status were used because of their relevance to vocational choice, high scores on the Masculinity/Femininity scale generally identifies young women who are most likely to choose masculine occupational roles and to enter occupations dominated by men.
High scores in the Status scale are indicative of vocational choices with a high prestige ranking and a need for upward mobility. Holland (1985) claims that high scores on the Status scale also are associated with self-confidence and self-esteem. The rationale would be therefore that the young women with positive self-esteem and not bound by traditional female roles would select occupations such as medicine and law.

There is also a crossover effect between gender and status. Congruence between the selection of non-traditional careers and Holland M/F type was found in the Wolfe and Betz study of 1981. Many careers seen as being high status are dominated by men. The equal opportunity and affirmative action policies in the community in general, and in the schools in particular, were set out to encourage bright young women to take up high status careers such as medicine, law and engineering. Such a trend is not without difficulty however. Silverman (1991) identified the possibility for high-ability young women to experience a dissonance in between selecting high status careers associated with non-traditional occupations and the current community attitudes. Mixed messaging can limit vocational exploration for high-ability young women. That is whether to have a high status career at the risk of neglecting children or indeed not having children at all (Carson, 2001).

Careers were identified as traditional or non-traditional on the basis of an examination of the 1996 Australian census (C-LIB, 1996) which identified the number of males and females employed in a variety of occupations in the state of Victoria. Non-traditional careers are those vocations not usually chosen by females. This inspection of the census enabled the researcher to attach a traditional or non-traditional descriptor to each of the final career choices nominated by all of the subjects in this investigation. Using Crosstabulations the relationships between subjects with traditional/non traditional vocational choices and those subjects with a high T-scores on the M/F scale (raw score=>8) was observed.
Table 4.6 Crosstabulations of all students selecting traditional and non-traditional careers.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n = 63)</th>
<th>Control (n= 49)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traditional observed</td>
<td>28 (44.4%)</td>
<td>33 (67.3%)</td>
</tr>
<tr>
<td>Expected</td>
<td>34.6</td>
<td>26.4</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>-1.2</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-trad. Observed</td>
<td>35 (55.5%)</td>
<td>15 (30.6%)</td>
</tr>
<tr>
<td>Expected</td>
<td>28.4</td>
<td>21.6</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>-1.4</td>
<td></td>
</tr>
</tbody>
</table>

In examining the observed cell frequencies in Table 4.7 it can be concluded that high-ability young women with high $M/F$ scores on the VPI are more likely than the control group to choose non-traditional vocations. Crosstabulations in Tables 4.6 and 4.7 show the relationship between the sample and control groups when examining traditional and non-traditional career choice. Standardized residuals clarify the source and strength of this relationship. It is generally accepted that a standardized residual outside the range of $-2.0$ and $+2.0$ will denote a significant departure from an expected result. Because there is a small relationship in the direction of the data when examining the observed cell frequencies it can be concluded that high-ability young women are marginally more likely than the control group to chose non-traditional vocations.

Table 4. 7 Crosstabulations showing students with high Masculinity/Femininity scores $T >=60$ choosing non-traditional vocations.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n = 26)</th>
<th>Control (n= 14)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traditional-Observed</td>
<td>10 (38.4%)</td>
<td>10 (71.4%)</td>
</tr>
<tr>
<td>Expected</td>
<td>13.0</td>
<td>7.0</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>-.8</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-trad -Observed</td>
<td>16 (61.5%)</td>
<td>4 (26.6%)</td>
</tr>
<tr>
<td>Expected</td>
<td>13.0</td>
<td>7.0</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>.8</td>
<td>-1.1</td>
<td></td>
</tr>
</tbody>
</table>

Within the sample group 41.2% (n=26) of the subjects had high T-scores in the $M/F$ scale compared to 28.5% (n=14) of the control subjects. A large percentage of students, 61.5% (n=16) in the sample cohort from a possible twenty-six high-
ability girls with high $M/F$ scores, did chose non-traditional career choices compared to 28.6% (n=4) from a possible fourteen of the control cohort.

These figures would suggest that although students with high $M/F$ scores did indeed select non-traditional careers, some subjects in the sample group with high $M/F$ scores also chose traditional vocations. It would appear that regardless of having high $M/F$ scores however the majority of the average schoolgirls in the control group chose traditional occupations.

The dimension of Status within the Holland VPI personality profiles is indicative of vocational choices with high prestige ranking. Within the sample 22.1% (n=14) had a “high” score in the Status sub-scale. However 28.6% also scored in the “medium to high” range. This would suggest that half of the young women in the sample cohort scored in the medium and high ranges. This can be compared to 12.2% of young women in the control group scoring in the “high” range and 20.2% in the “medium” range; that is, around one-third.

In order to answer the research question regarding vocational interest reflecting final career choice, the highest individual VPI vocational interest score for each student in the two cohorts was identified and compared to her final career choice. Final career choice was determined by the vocation last nominated by each student. These results are presented in both graph and table form (Figure 4.4 and Table 4.8)

**Figure 4.4 Comparison of highest individual RAISEC scale for sample and control groups. (%)**
Table 4.8 Number of subjects and percentages for the highest individual interest score.

<table>
<thead>
<tr>
<th>VPI category</th>
<th>Sample (n= 63)</th>
<th>Control (n= 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Realistic</td>
<td>9</td>
<td>14.2</td>
</tr>
<tr>
<td>Investigative</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td>Social</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Artistic</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Enterprising</td>
<td>13</td>
<td>20.6</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Raw scores which are high in terms of an appropriate normative sample are calculated as having a high T-score (Holland 1985). As indicated in Figure 4.4 and Table 4.8, apart from Realistic and Conventional interests, the control group had a relatively flat VPI profile. In contrast, the high-ability cohort had predominantly Investigative and Enterprising vocational interests. Thirty-five percent of highly able students (n= 22) had high Investigative vocational interests compared to 20.4% (n=10) of the control cohort. The next most strongly represented category within the sample cohort was that of Enterprising. Within the control group Enterprising, Investigative and Social interests were more evenly spread. Within the sample cohort the Social scale was nominated by 12.7% of the group compared to 18.4% of the students within the control cohort. The Enterprising scales were represented more strongly in the control cohort than in the sample. Interests in Enterprising vocations accounted for 20.6% of the sample and 26.5% of the control group.

The study seeks to examine and identify an expected continuum or connection from the initial vocational interests identified through the VPI to the actual career choices specified by the young women. The frequency tables pertaining to the Holland codes attached to the individual’s final career choice, and their highest T-score on the RIASEC scale of the VPI, are summarized in Figures 4.5, 4.6 together with Table 4.9.

![Figure 4.5 VPI profile and FCC (sample)](image)

![Figure 4.6 VPI profile and FCC (control)](image)
### Table 4. 9 VPI profile and final career choice.

<table>
<thead>
<tr>
<th></th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest VPI score (n=63)</td>
<td>%</td>
</tr>
<tr>
<td>Realistic</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Investigative</td>
<td>22</td>
<td>34.9</td>
</tr>
<tr>
<td>Artistic</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Social</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>Enterprising</td>
<td>13</td>
<td>20.6</td>
</tr>
<tr>
<td>Conventional</td>
<td>3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Apart from Realistic interests no marked difference between the groups was observed when examining the VPI profile and final career choice. Although the Realistic scale was the highest individual score for 14.3% (n=9) of the sample cohort, only 3.2% (n=2) actually selected Realistic careers. Within the sample 34.9% (n=22) of the group had their highest individual RIASEC score in the Investigative scale. The same percentage of the sample (34.9%), selected vocations which were classified Investigative in the ASCO document of 1983. The Enterprising dimension was the highest scale for 20.6% (n=13) of the sample and 23.8% (n=15) of this group actually selected Enterprising vocations. The Holland scale Social was the highest individual score for 12.7% (n=8) of the sample but 17.5% (n=11) of the group actually chose Social vocations. The Artistic scale was the highest score for 12.7% (n=8) of the sample group and 17.5% (n=11) of the subjects chose vocations within the Artistic domain.

Within the control group the consistency between highest RIASEC score and the final career choice also was similar. The Realistic scale was the highest individual score for 12.2% of the control group compared to 14.6% who chose Realistic vocations. The Social domain was the highest scale for 20.4% of students with 18.4% of subjects selecting a Social vocation. Although 26.5% had their highest score as Enterprising, 18.4% of this group actually chose vocations that were classed as Enterprising. There appeared to be a slight shift in the Investigative scale with 20.4% of students having high scores in this area on the VPI with 26.5% of this group choosing Investigative careers.
The VPI predicted career choice in both groups. There was however a particularly high degree of congruence in the Investigative, Artistic, Enterprising and Social categories for all subjects in the sample. There was a small mismatch in the translation of Realistic and Conventional interests into comparative careers. Realistic interests were nominated by 14.3% (n=9) of the students. Only two students chose Realistic careers, both engineering. Three students indicated Conventional interests. Five students nominated vocations classified as Conventional: hairdressers, nurses and salespersons for example.

The highest VPI score and final career choices for the control group were more evenly spread over the categories. In this the match of interest and final career choice was less pronounced. There was a shift in preferences when vocation interests in the Enterprising category (n=13) did not translate into Enterprising careers (n=9). The slight change in the Social, Artistic and Realistic interests appears to convert Conventional and Investigative careers.

This study found over time changes made in the vocational choice initially nominated, and the final vocational choice of the subjects was primarily in the categories of professional and para-professional (Table 4.10 p82). This result remained stable for both groups. Vocational choices were aggregated into ASCO categories. Comparisons then could be made on a case by case basis of the subjects’ or nominations in the first year of the study with actual vocational choices from the final year of the study. The frequency tables for the sample and control groups were then examined separately.
Table 4.10 Stability of career choice based on ASCO codes.

<table>
<thead>
<tr>
<th>Career Choice</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial (n=60)</td>
<td>Final (n=63)</td>
</tr>
<tr>
<td>Managerial</td>
<td>1 1.6</td>
<td>3 4.8</td>
</tr>
<tr>
<td>Professional</td>
<td>47 74.6</td>
<td>56 88.9</td>
</tr>
<tr>
<td>Para-profess</td>
<td>9 14.3</td>
<td>2 3.2</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>1 1.6</td>
<td>0 0</td>
</tr>
<tr>
<td>Clerk</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Sales/service</td>
<td>1 1.6</td>
<td>2 3.2</td>
</tr>
<tr>
<td>Operator/driver</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Labourer</td>
<td>1 1.6</td>
<td>0 0</td>
</tr>
<tr>
<td>Home/unemployed</td>
<td>0 0</td>
<td>0 0</td>
</tr>
</tbody>
</table>

As indicated in Table 4.10 professional careers were nominated by 74.6% (n=47) as an initial career choice by the sample, and para-professional vocations 14.3% (n=9). Although the strength of choice within the professions remained, with 88.9% (n=56) nominating vocations in the professional domain, the next highest group, 4.8% (n=3) were in the managerial category and 3.2% (n=2) were classified para-professional. In the final year of data collection thirty-three subjects did not return the questionnaire (28% of the sample and 32% of the controls) and so final career choice was calculated from the vocations nominated by the subjects in the questionnaire last completed by them. As a consequence of this the results, particularly those of the controls, could be obscured.

The limited differences between the sample and the control could be reflective of the assessment process in Australian schools. The subjects would not have had formal examinations until the last two years of school. The actual careers nominated in the para-professional area were those of nurse, ship’s pilot, sportsperson and policewoman. Only one high-ability girl nominated a career in the managerial category. When final career choice was examined, only the sportswoman predicted her vocational path. It was apparent that the other three had changed their vocational choices in order to aim for managerial positions. The young woman who had nominated a pilot as her initial career for example had decided to become a commissioned officer in the air force.
Of the control cohort 59.2% nominated professional careers as their early career choice. Careers in the para-professional category were nominated by 14.3% of the students. The drift from para-professional occupations to professional and managerial vocations was observed in the control cohort also. Professional occupations are somewhat broad in the ASCO categories. Some careers categorised as professional are not as academically rigorous as others. In the final year of the study, 69.4% of the control cohort still nominated professional careers. However 12.5% (n=6) of the control group now nominated careers in sales and service. This could be taken as a more realistic approach to vocational choices by some the girls in the control cohort who may have had their plans dampened by lower than expected marks at school.

**Parental occupation and vocational choice.**

The occupation of parents of the girls in this study has been used as an indication of economic and social status. It would be reasonable to expect therefore a similar degree of social status as their parents would be attached to the careers chosen by the girls.

Table 4.11 Parents’ occupation and daughters’ final career choice using ASCO codes.

<table>
<thead>
<tr>
<th>Career</th>
<th>Sample (n=63)</th>
<th>Control (n=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mn</td>
<td>%</td>
</tr>
<tr>
<td>Managerial</td>
<td>6</td>
<td>9.5</td>
</tr>
<tr>
<td>Professional</td>
<td>22</td>
<td>34.9</td>
</tr>
<tr>
<td>Para-profess</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>3</td>
<td>4.8</td>
</tr>
<tr>
<td>Clerk</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Sales/service</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>Operator/drive</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Home/unempl</td>
<td>9</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Mn= number of mothers.  
Fn= number of fathers.  
Dn= number of daughters.
As indicated in Table 4.11 managers and administrators made up 25.4% (n=16) of the sample fathers. Only 4.8% (n=3) of the daughters in the sample group nominated managerial careers however. The considerable lack of consistency for occupational prediction within the managerial group in particular is a feature of these findings. The professions were represented by 42.9% (n=20) of the fathers but 88.9% (n=56) of their daughters nominated professional vocations. Fathers who were para-professional constituted 3.2% (n=2) of the sample with 3.2% (n=2) of daughters also nominating para-professional vocations. Careers in sales and service were held by 4.8% (n=3) of sample fathers with 3.2% (n=2) of daughters electing vocations within this classification. None of the daughters nominated clerks, machine operators or labourers as vocational options.

Within the control group, although 22.4% (n=11) of fathers were managers, no daughter nominated a managerial vocation as her final career choice. Professional fathers within the control group accounted for 40.8% (n=20) of the population. Professional occupations were nominated by 69.4% (n=34) of their daughters.

The results for mothers’ occupation and daughters’ final career choice were not dissimilar. Although the actual vocation of parent and projected career of daughter are not the same, they do tend to be within the same general occupational group. Ten of the sample mothers and nine of the control mothers did not work outside the home. The majority of mothers in both the sample and the control groups were employed in roughly the same occupational areas as fathers. An exception was that of managers and administrators. Very few of the mothers in the sample (n=6) or the control (n=1) were in this category.

Because some highly able young people often unconsciously reject their own talents and their parent’s value system they are confirming their independence (Buescher, 1991) parental occupations and their daughters’ career choice aversions were examined.
Table 4.12 Parents’ occupation and daughters’ career aversion using ASCO codes.

<table>
<thead>
<tr>
<th>Career</th>
<th>Sample (n=63)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Control (n=49)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mn</td>
<td>%</td>
<td>Fn</td>
<td>%</td>
<td>Dn</td>
<td>%</td>
<td>Mn</td>
<td>%</td>
<td>Fn</td>
</tr>
<tr>
<td>Managerial</td>
<td>6</td>
<td>9.5</td>
<td>16</td>
<td>25.4</td>
<td>16</td>
<td>25.4</td>
<td>2</td>
<td>4.1</td>
<td>11</td>
</tr>
<tr>
<td>Professional</td>
<td>22</td>
<td>34.9</td>
<td>27</td>
<td>42.9</td>
<td>27</td>
<td>42.9</td>
<td>19</td>
<td>38.8</td>
<td>20</td>
</tr>
<tr>
<td>Para-profess</td>
<td>5</td>
<td>7.9</td>
<td>2</td>
<td>3.2</td>
<td>2</td>
<td>3.2</td>
<td>4</td>
<td>8.2</td>
<td>4</td>
</tr>
<tr>
<td>Tradesperson</td>
<td>3</td>
<td>4.8</td>
<td>6</td>
<td>9.5</td>
<td>6</td>
<td>9.5</td>
<td>2</td>
<td>4.1</td>
<td>7</td>
</tr>
<tr>
<td>Clerk</td>
<td>9</td>
<td>14.3</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
<td>1.6</td>
<td>6</td>
<td>12.2</td>
<td>0</td>
</tr>
<tr>
<td>Sales/service</td>
<td>6</td>
<td>6.5</td>
<td>3</td>
<td>4.8</td>
<td>3</td>
<td>4.8</td>
<td>5</td>
<td>10.2</td>
<td>0</td>
</tr>
<tr>
<td>Operator/drive</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3.2</td>
<td>2</td>
<td>3.2</td>
<td>1</td>
<td>2.0</td>
<td>3</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
<td>1.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Home/unemployment</td>
<td>9</td>
<td>14.3</td>
<td>1</td>
<td>1.6</td>
<td>1</td>
<td>1.6</td>
<td>9</td>
<td>18.4</td>
<td>2</td>
</tr>
</tbody>
</table>

Mn= number of mothers. Fn= number of fathers Dn= number of daughters.

The parents’ occupations and daughters’ career choice aversions are presented in Table 4.12. A large percentage of the subjects in both the groups nominated professional careers as what they would not choose. This appears to contradict the earlier data. The apparent anomaly is a function of the large number of vocations that are in classed “professional” and the data could not discriminate sufficiently.

Of particular interest however was the number of high-ability girls (n=16) who reported that a career in management was one they would never undertake. This number matched the number of high-ability fathers in managerial positions. Such a phenomenon will be discussed in relation to the fathers’ influence, positive or indeed negative, in the Results section of Study Two.

**Context and vocational decision-making.**

The DMQ was developed by the researcher to identify vocational aspirations, together with relative interest and influence perceived as being exerted by mother, father, teacher, friends and the media. The shift from *perceived interest*, to *perceived influence*, to actual vocational *suggestions* was addressed in the DMQ. The arguments...
in the literature suggest that there is a very different experience between high-ability girls and average girls. This instrument was an attempt to isolate the process into these three distinct phases and how these were affected by context. The DMQ was used to interpret and identify differences between the groups.

Using *t*-tests for independent groups the difference between the sample and control group in each of the variables was made evident. Over the three years a limited number of variables were statistically different between the sample and the control cohorts. In the first year of the study eight out of the twenty questions on the DMQ identified a significant difference between the two groups. These differences were associated with vocational aspiration, friends’ *interest*, mothers’ and fathers’ vocational *suggestions*, the extent of difference between the *views* of the mother and daughter and the *influence* of media role models. In the second year of the data collection six items relating to vocational aspirations, teachers’ *suggestions*, mothers’, teachers and friends *views* were statistically different between the groups. The influence of role-models and the perceived *interest* of friends were no longer statistically different. In the third year there were only two areas of statistical difference between the groups. These related to the fathers’ *interest* in career choice and expectations of advancement in the chosen vocation – one of the three dimensions of aspiration. In all other areas there was no difference.

When interpreting the limited differences in the data the homogeneity of the school system at the time of data collection must be considered. The high-ability subjects would have experienced an educational context comparable to the control cohort. The sample was operating within a mainstream setting with few if any modifications to their curriculum despite identification of particular students as being bright.

These data have been reported in both graphic and tabular form.

As shown in Tables 4.13, 4.14 and 4.15, in the first year of the study the two questions relating to the dimension of vocational aspiration, “I will do further study after school” and “I expect my career to be stimulating” differentiated between
sample and control. “I expect prospects of advancement” was not statistically different between the groups until the third year at the same time the two other dimensions were no longer statistically different.

Table 4.13 Summary of $t$-test based on vocational aspirations over the three years of Study One
(I will do further study after school).

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>df</th>
<th>$t$-value</th>
<th>2-tail Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
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<td>$t$-value</td>
</tr>
<tr>
<td>Year 1</td>
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<td>4.7143</td>
<td>0.607</td>
<td>0.076</td>
<td>48</td>
<td>4.2292</td>
<td>.4851</td>
<td>1.325</td>
<td>109</td>
<td>2.58</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.7500</td>
<td>0.548</td>
<td>0.073</td>
<td>43</td>
<td>4.2791</td>
<td>.4709</td>
<td>1.120</td>
<td>97</td>
<td>2.75</td>
</tr>
<tr>
<td>Year 3</td>
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<td>4.2444</td>
<td>1.132</td>
<td>0.169</td>
<td>34</td>
<td>4.3529</td>
<td>-.1085</td>
<td>1.041</td>
<td>77</td>
<td>-.44</td>
</tr>
</tbody>
</table>

Note: * p<0.1

Figure 4.7 I will do further study Year One (%)

On the two dimensions relating to vocational aspirations “I will do further study after school” and “I expect my career to be stimulating” the differences remained stable into the second year of data collection. This would suggest that the subjects were consistent in how they perceived their vocational aspirations. In year three however there was statistical difference between the groups in only one of the
three questions relating to aspiration “I expect prospects of advancement”. In the first two years of Study One this question relating to promotion did not differentiate between the groups.

Table 4.14 Summary of t-test based on vocational aspirations over the three years of Study One
(I expect my career to be stimulating).

<table>
<thead>
<tr>
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<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
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<td>4.7460</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.8929</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>4.6739</td>
</tr>
</tbody>
</table>

Note: * p<0.1

Figure 4.8 I expect my career to be stimulating Year One (%)

When interpreting the data it is of interest to note that the controls only believed that further study and a stimulating career were of no or little importance. This attitude can be interpreted as reflecting the differing expectations of high-ability and average students.
Table 4.15 Summary of *t*-test based on vocational aspirations over the three years of Study One (I expect prospects of advancement).

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
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<td>4.4286</td>
<td>0.893</td>
<td>0.112</td>
<td>49</td>
<td>4.2041</td>
<td>0.957</td>
<td>0.176</td>
<td>110</td>
<td>1.28</td>
<td>.20</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>4.3036</td>
<td>0.893</td>
<td>0.119</td>
<td>43</td>
<td>4.4884</td>
<td>.1848</td>
<td>0.827</td>
<td>97</td>
<td>-1.05</td>
<td>.29</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>4.1404</td>
<td>1.147</td>
<td>0.169</td>
<td>34</td>
<td>4.5000</td>
<td>-3.696</td>
<td>0.707</td>
<td>78</td>
<td>-1.78</td>
<td>.08 *</td>
</tr>
</tbody>
</table>

Note: * p< 0.1

Figure 4.9. I expect prospects of advancement Year One (%)

Such a result could be expected as a function of the young women’s uncertainty of what lay beyond study. At this stage in the investigation all the subjects were still at school. Doubts about academic results, together with then current unreliable job prospects may have caused the subjects to be unwilling to project too far ahead. In the third year the girls who continued to be involved in Study One had left school were studying at University or employed. It could be expected that the subjects who lacked vocational aspiration could be found in the missing data (n=33).
Only three of the thirty-three young women represented in the missing data had low vocational aspirations in the first year of Study One however and so this assumption is questionable.

**High self-esteem as a predictor of high vocational aspirations**

For the purpose of this study high vocational aspirations were determined by a response of ‘most important’ to all three of the questions on the DMQ relating to further study, stimulation and promotion. Criteria for High self-esteem was taken as being a score in the fourth quartile on the CSEI. Within the sample cohort thirty-one out of a possible sixty-three students had very high vocational aspirations. Only nineteen students had high self-esteem scores. Within the control group, fifteen students from a possible forty-nine had very high vocational aspirations. Twenty-four girls in the control group from a possible forty-nine had high self-esteem scores. Although the girls in both groups with high self-esteem did have high vocational aspirations these results would suggest that high self-esteem did not predict high vocational aspirations for either group.

**To whom would you go for advice?**

In the first year of Study One, the subjects were asked from whom they would seek career advice. The sample nominated at least three potential advisors: “career adviser” (45.2%) as their first choice, “parents” (30.2%) were their second and “people in the profession/job” (29%) as their third choice.

Of the control subjects 44.2% also felt that “career advisers” were the first point of contact. The second choice of the control group (21.4%) was the advice of parents. The third choice of this cohort was evenly distributed between career advisers, 30%, friends 10 %, and nominated relatives and “friends of friends” (30%). Both groups looked to careers teachers initially and then to their parents for vocational advice. When looking for further advice, the sample displayed a degree of independence tending to choose people working in that particular job, whereas the
control group appeared to place more importance on the advice of friends and relatives.

Over time this perception did not change markedly. In year two of the study parents and teachers still assumed importance for both the sample and control groups. In the second year of the study “people in the job” also became an important reference for subjects in both the control cohort and the sample. Previously people in the job had assumed importance only for the high-ability cohort. Missing data from both the control and sample groups made the data from year three less meaningful.

**Perceived interest and influence on vocational choice over time.**

Social influencers are factors within the subjects’ environment which may play a decisive role in their vocational trajectory. The shifts from perceived interest to perceived influence by way of actual suggestions and views of career options are addressed within the framework of this investigation. These are identified through direct questioning on the DMQ. As well as t-tests to identify differences between the groups, the descriptive frequency tables relating to the perceived role of the four variables mother, father, teachers and friends were examined over the three years of the study in order to and add further insight into those differences. The relative importance of role models in the media also was addressed as a social influencer of significance from the wider community which may have been experienced differently by the high-ability and controls.

These data are summarized in both graphs and tables. The results of t-tests are presented in Tables 4.16 – 4.32 (pp 93-101).
Table 4.16 Summary of t-tests based on perceived interest of mother over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>N</th>
<th>Mean</th>
<th>Mean Diff</th>
<th>SD</th>
<th>SE</th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
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<td>3.9048</td>
<td>0.011</td>
<td>0.127</td>
<td>49</td>
<td>4.0408</td>
<td>-.1361</td>
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<td>0.149</td>
<td>110</td>
<td>-.70</td>
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<tr>
<td>Year 2</td>
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<td>4.1607</td>
<td>0.869</td>
<td>0.116</td>
<td>43</td>
<td>4.3023</td>
<td>-.1416</td>
<td>0.989</td>
<td>0.151</td>
<td>97</td>
<td>-.76</td>
<td>0.451</td>
</tr>
<tr>
<td>Year 3</td>
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<td>0.924</td>
<td>0.136</td>
<td>35</td>
<td>4.2571</td>
<td>-.1484</td>
<td>0.886</td>
<td>0.150</td>
<td>79</td>
<td>-.73</td>
<td>0.468</td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1

Table 4.17 Summary of t-tests based on perceived influence of mother over the three years.

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<tr>
<th>Sample</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
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<th>Mean</th>
<th>Mean Diff</th>
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<th>SE</th>
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</thead>
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<tr>
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<td>2.5556</td>
<td>1.254</td>
<td>0.158</td>
<td>48</td>
<td>2.7917</td>
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<td>1.254</td>
<td>0.181</td>
<td>109</td>
<td>-.98</td>
<td>0.328</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.8750</td>
<td>1.176</td>
<td>0.181</td>
<td>43</td>
<td>2.9767</td>
<td>-.1017</td>
<td>1.185</td>
<td>0.181</td>
<td>97</td>
<td>-.43</td>
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</tr>
<tr>
<td>Year 3</td>
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<td>3.0217</td>
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<td>0.180</td>
<td>35</td>
<td>2.7714</td>
<td>.2503</td>
<td>1.190</td>
<td>0.201</td>
<td>79</td>
<td>.92</td>
<td>0.358</td>
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</table>

Note: * denotes p< 0.1
Table 4.18 Summary of $t$-tests based career suggestions of mother over the three years.

<table>
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<th>Sample</th>
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<tbody>
<tr>
<td>N</td>
<td>Mean</td>
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<tr>
<td>Year 1</td>
<td>62</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1

Table 4.19 Summary of $t$-tests based on difference between career views of mother and subject over the three years.

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</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
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<tr>
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<td>61</td>
</tr>
<tr>
<td>Year 2</td>
<td>51</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1
Table 4.20 Summary of *t*-tests based on interest of the father over the three years.

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<th>Sample</th>
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<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
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<td>1.428</td>
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<td>-1.05</td>
<td>0.295</td>
</tr>
<tr>
<td>Year 2</td>
<td>55</td>
<td>3.6364</td>
<td>1.419</td>
<td>0.191</td>
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<td>3.6744</td>
<td>-.0381</td>
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<td>-.13</td>
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</tr>
<tr>
<td>Year 3</td>
<td>45</td>
<td>3.4222</td>
<td>1.406</td>
<td>0.210</td>
<td>35</td>
<td>3.9429</td>
<td>-.5206</td>
<td>1.211</td>
<td>-1.78</td>
<td>0.080 *</td>
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</tbody>
</table>

Note: * denotes p< 0.1

Table 4.21 Summary of *t*-tests based on the influence of the father over the three years.

<table>
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<th>Sample</th>
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<th></th>
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<th>Control</th>
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<th></th>
<th>df</th>
<th>t-value</th>
<th>2-tail sig.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-1.00</td>
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<tr>
<td>Year 2</td>
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<td>2.5273</td>
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<td>0.180</td>
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<td>2.4419</td>
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<td>0.278</td>
<td>.32</td>
<td>0.749</td>
</tr>
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<td>0.199</td>
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<td>2.6571</td>
<td>.0349</td>
<td>0.235</td>
<td>-.12</td>
<td>0.905</td>
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Note: * denotes p< 0.1
### Table 4.22 Summary of $t$-tests based on the career suggestions of the father over the three years.

<table>
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<td>Mean</td>
<td>Mean D</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>SE</td>
<td>df</td>
<td>t-value</td>
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<td>0.058*</td>
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<tr>
<td>Year 2</td>
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<td>1.471</td>
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<td>43</td>
<td>0.198</td>
<td>-.1011</td>
<td>1.447</td>
<td>0.221</td>
<td>96</td>
<td>-0.34</td>
<td>0.735</td>
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<td></td>
</tr>
<tr>
<td>Year 3</td>
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<td>2.7778</td>
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<td>35</td>
<td>0.224</td>
<td>-.3651</td>
<td>1.396</td>
<td>0.236</td>
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<td>-1.11</td>
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Note: * denotes $p < 0.1$

### Table 4.23 Summary of $t$-tests based on difference between career views of father and subject over the three years.

<table>
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<th>Sample</th>
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<td>Mean</td>
<td>Mean D</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>SE</td>
<td>df</td>
<td>t-value</td>
</tr>
<tr>
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<td>45</td>
<td>2.1304</td>
<td>.3780</td>
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<td>0.175</td>
<td>103</td>
<td>1.44</td>
<td>0.154</td>
<td>0.154</td>
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<td>50</td>
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<td>1.297</td>
<td>0.182</td>
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<td>-.0158</td>
<td>1.329</td>
<td>0.203</td>
<td>91</td>
<td>-.06</td>
<td>0.954</td>
<td>0.954</td>
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<tr>
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<td>0.255</td>
<td>32</td>
<td>2.4375</td>
<td>.0888</td>
<td>1.366</td>
<td>0.242</td>
<td>68</td>
<td>.25</td>
<td>0.804</td>
<td>0.804</td>
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</table>

Note: * denotes $p < 0.1$
Table 4.24 Summary of t-tests based on interest of teachers over the three years.

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<tbody>
<tr>
<td></td>
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<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>Mean D</td>
<td>SD</td>
<td>SE</td>
<td>df</td>
<td>t-value</td>
<td>2-tail sig.</td>
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<td>Year 1</td>
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<td>2.9841</td>
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<td>2.8367</td>
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<td>0.150</td>
<td>110</td>
<td>0.76</td>
<td>0.448</td>
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</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.8393</td>
<td>1.058</td>
<td>0.141</td>
<td>43</td>
<td>2.5814</td>
<td>.2579</td>
<td>1.052</td>
<td>97</td>
<td>1.21</td>
<td>0.231</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>45</td>
<td>2.7333</td>
<td>1.147</td>
<td>0.147</td>
<td>35</td>
<td>2.9143</td>
<td>-.1810</td>
<td>1.052</td>
<td>78</td>
<td>-0.76</td>
<td>0.451</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1

Table 4.25 Summary of t-tests based on influence of teachers over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>Mean D</td>
<td>SD</td>
<td>SE</td>
<td>df</td>
<td>t-value</td>
<td>2-tail sig.</td>
</tr>
<tr>
<td>Year 1</td>
<td>62</td>
<td>2.2097</td>
<td>1.189</td>
<td>0.151</td>
<td>49</td>
<td>2.2917</td>
<td>.0820</td>
<td>1.202</td>
<td>108</td>
<td>-.36</td>
<td>0.722</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>2.1071</td>
<td>1.131</td>
<td>0.152</td>
<td>43</td>
<td>2.0465</td>
<td>.0606</td>
<td>1.872</td>
<td>97</td>
<td>.26</td>
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<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>2.2391</td>
<td>1.079</td>
<td>0.159</td>
<td>35</td>
<td>2.1765</td>
<td>.0627</td>
<td>0.999</td>
<td>78</td>
<td>.26</td>
<td>0.792</td>
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</tr>
</tbody>
</table>

Note: * denotes p< 0.1
Table 4.26 Summary of $t$-tests based career suggestions of teachers over the three years.

|      | Sample      | Control     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | N           | Mean        | SD    | SE    | N     | Mean    | Mean D| SD    | SE    | N     | Mean    | Mean D| df    | t-value| 2-tail sig. |
| Year 1 | 62         | 2.3548    | 1.243 | 0.158 | 49     | 2.2653   | .0895 | 1.255 | 0.179 | 109   | .38     | 0.708 |
| Year 2       | 56         | 2.5893    | 1.125 | 0.150 | 43     | 2.1628   | .4265 | 1.067 | 0.163 | 97    | 1.91    | 0.059 *|
| Year 3       | 46         | 2.3478    | 1.269 | 0.187 | 35     | 2.6286   | -.2807| 1.374 | 0.232 | 79    | -.95    | 0.344 |

Note: * denotes $p< 0.1$

Table 4.27 Summary of $t$-tests based on difference between career views of teachers and subject over the three years.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Control</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>Mean D</td>
<td>SD</td>
<td>SE</td>
<td>N</td>
<td>Mean</td>
<td>Mean D</td>
<td>df</td>
<td>t-value</td>
<td>2-tail sig.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>59</td>
<td>2.2881</td>
<td>1.287</td>
<td>0.168</td>
<td>46</td>
<td>2.1304</td>
<td>.3104</td>
<td>1.097</td>
<td>0.164</td>
<td>101</td>
<td>1.33</td>
<td>0.188</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>51</td>
<td>2.4314</td>
<td>1.269</td>
<td>0.178</td>
<td>43</td>
<td>1.8372</td>
<td>.5942</td>
<td>0.898</td>
<td>0.137</td>
<td>92</td>
<td>2.57</td>
<td>0.012 *</td>
<td></td>
<td></td>
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<tr>
<td>Year 3</td>
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<td>2.2258</td>
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<td>0.190</td>
<td>70</td>
<td>.97</td>
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</tbody>
</table>

Note: * denotes $p< 0.1$
### Table 4.28 Summary of *t*-tests based on interest of friends over the three years.

<table>
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<th>Sample</th>
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</thead>
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<tr>
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<td>Year 2</td>
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<tr>
<td>Year 3</td>
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<td>3.3478</td>
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</tbody>
</table>

Note: * denotes p< 0.1

### Table 4.29 Summary of *t*-tests based on influence of friends and subject over the three years.

<table>
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<th>Sample</th>
<th>Control</th>
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</thead>
<tbody>
<tr>
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</tr>
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<tr>
<td>Year 2</td>
<td>56</td>
<td>2.2321</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>2.4565</td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1
Table 4.30 Summary of *t*-tests based on career suggestions of friends over the three years.

<table>
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<th>Sample</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Year 1</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1

Table 4.31 Summary of *t*-tests based on difference between career views of friends and subject over the three years.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>Year 1</td>
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<td>Year 2</td>
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<tr>
<td>Year 3</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes p< 0.1
Table 4.32 Summary of t-tests based on importance of media role models over the three years.

<table>
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<th>Sample</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Year 1</td>
<td>63</td>
<td>1.3810</td>
</tr>
<tr>
<td>Year 2</td>
<td>56</td>
<td>1.5536</td>
</tr>
<tr>
<td>Year 3</td>
<td>46</td>
<td>1.5435</td>
</tr>
</tbody>
</table>

Note: * denotes p < 0.1
Perceived interest and influence of the mother over time.

In the context of the DMQ interest can be viewed as the attention or concern on the part of parents, teachers and friends to the vocational decision-making process of the student. The expectations, values and needs transmitted to young women through the traditional family have been identified as critical to the vocational opportunities that they recognise and report (Callahan, 1991; Kerr, 1991; Olzwewski, et.al., 1987).

It is recognised that mother and father may be perceived differently therefore they are observed in isolation. The perception of mother’s interest, influence and actual vocational suggestions and views are analysed and can be seen in Tables 4.16, 4.17 and 4.19 (p 93-94) and Figures 4.10, 4.11 and 4.12.

Figure 4.10 Perceived interest of mother over three years of the study (%).

As shown in Table 4.16 (p 93) the perceived interest of the mother was not statistically different between the two groups in the first year. In years two and three this perception did not change. Although the perceived interest of the mother was not statistically different between the groups, the frequency tables (Figure 4.10) do indicate a diminishing level of interest recognised by the sample group. This could suggest that other influences became more relevant for this group of high-ability girls. It could be interpreted also as a changing parent-child alignment as the mother-daughter bond is replaced by a father-daughter relationship as the daughters move out
of school into the workforce. Within the control cohort the perceived interest of the mother remained relatively constant over the three years of the study.

Figure 4.11 Perceived influence of mother over the three years of the study (%).

Similarly in Table 4.17 (p 94) the perceived influence of the mother as distinct from perceived interest was not statistically different between the groups. This perception held true for the next two years. The figures used to identify a shift can be examined in Figure 4.12. Within the sample, only 4.8% of the high-ability subjects compared to 10.4% of the control (Figure 4.11) believed that their mothers had “a great deal” of importance in their vocational decision-making. Conversely 26.8% of the sample cohort compared to 18.8% of the control group answered “not at all important”. Around one-fifth of both the sample the control group however believed that their mothers had “a fair amount” of influence. If the dimensions “fairly important” and “most important” are collapsed and viewed in isolation, the mother’s influence as perceived by the girls remained constant over the three years of the study for the sample cohort but became lower for the control group.

Actual suggestions of career options by mother over time.

In Table 4.18 (p 93) it can be seen that the actual vocational suggestions of the mother imply an active intervention reflecting her interest and influence on vocational choice. When a t-test for independent groups was applied this dimension was found
to be statistically different in the first year of the study only. It was no longer statistically different in the following two years of Study One.

Figure 4.12 Actual suggestions of mother over the three years of the study (%).

The Bar Chart (Figure 4.12) indicated that within the sample cohort 20.6% answered “a great deal” of vocational advice was given by their mothers. Within the control group a higher proportion (32.7%) believed there was “a great deal” of vocational advice. When the dimensions “a great deal” and “a fair amount” were collapsed and examined in isolation, there appears to be little shift over the three years for the sample cohort. Within the control group however, the mother’s suggestions appear to assume far more importance in the first year of the study and to diminish subsequently.

Comparison between vocational views of mother and self over time.

Results from the t-test shown in Table 4.19 (p 94) indicate that the vocational views of the mother and daughter in the first two years of the study were statistically different. In the final year of Study One there was no statistical difference however. Although the findings suggest that the mothers of both groups were interested in their daughters’ career choices views of the sample mothers differed from those of their daughters.
The relative position of difference between the two groups is illustrated by Figure 4:13. Of the sample 28.6% compared to 51% of the control cohort answered “not at all different” when their mothers’ vocational expectations were compared to their own. This remained constant over the next two years of the study. The perception of the girls in the control cohort was that their mothers’ views regarding an appropriate vocational choice for them were not at all different to their own. In the third year there was a convergence towards the sample as both groups believed that their views and those of their mothers were becoming less like their own. As the girls came closer towards a career path other resources would be seen as being relevant to an adolescent girl’s decision-making. Thus in the final year of Study One the young women in both groups indicated that ‘people in the job’ were assuming more importance in their vocational decision-making.

*Perceived interest in career decisions of father over time.*

It has been reported that although a young child of either gender hold vocational attitudes much the same as those held by both parents until adolescence, they became more reflective of their father’s attitudes during and after this developmental period (Kerr, 1991a; Wijting, Arnold & Conrad, 1978). This view was not evident in the findings of the quantitative study. From the vantage of micro-analysis however the influence of father was acknowledged as being greater than that of their mother. This influence was both positive by the way of encouragement and modelling or indeed negative as the daughters believed they were bullied or ‘pressured’.
As shown in Table 4.20 (p 95) the perceived interest of the father was not statistically different between the two groups in the first and second year of the study paralleling findings from the mother. In the third year however fathers’ perceived vocational interest was significantly different between the groups. This difference is indicated in Figure 4.14. In year one within the sample cohort 24.4% compared with 20.4% of the control cohort believed that their fathers had taken “a great deal” of interest in their decision-making. The interest of the sample fathers’ increased in the second year (34.9%) of the study but diminished (19%) the following year. Within the control group fathers’ perceived interest increased steadily over the next two years (30.6% to 28.6%). As mother’s perceived interest diminished, his increased.

*Perceived influence of father in career decision-making over time.*

Results from the t-test for independent groups are shown in Table 4.21 (p 95). The perceived influence of the father was not statistically different over the three years of the study.
It can be observed in Figure 4.15 that in the first year of the study 35% of the sample and 25% of the control group said that their fathers had “little influence” on their vocational decision-making. Approximately 20% of the sample reported that their fathers had “a fair amount” of influence however compared to 10% of the control group. This perception changed for both groups only slightly over the three years as fathers were then seen to have “some” or “a fair amount” of influence on the young women.

*Actual suggestions of career options by father over time.*

Results from the independent *t*-test Table 4.22 (p 96) shows that this variable was statistically different between the two groups in the first year of the study only. The frequencies reproduced in Figure 4.16 indicate that within the sample 15.9% of the subjects nominated “a great deal” when alluding to the vocational suggestions made by their fathers. Of the control group, 18.4% also nominated “a great deal”. However when the category “a fair amount” was observed, 36.7% of the control group was in this category compared to only 15.9% of the high-ability girls. The polarized results suggest that the girls within the control group perceive that their fathers’ vocational suggestions were of more importance.

*Figure 4.16 Actual vocational suggestions by father over the three years of the study (%).*
Perceived comparison between vocational views of father and self over time.

As shown in Table 4.23 (p 96) there was no statistical difference in the comparison of the vocational views of father and daughter between the groups. This was the case throughout the three years of the study. An examination of Figure 4.17 indicate that within the sample 38.1% of the subjects believed that their father’s vocational expectations for them were “not at all different” from their own. Of the control group 43% said that their father’s vocational expectations for them were “not at all different”. The large instance of missing data from the sample in year three was due, in part, to this question being left unanswered.

Figure 4.17 Views of father and daughter over three years (%).

When viewed together, the results of the analysis of perceived interest, influence, suggestions and views propose that mothers and fathers of both groups are interested in their daughters’ vocational choices and make career suggestions. This does not necessarily translate into strong vocational influence however. Initially the sample believed that both mother (27%) and father (25.3%) exerted a similar degree of influence “a fair amount” to “a great deal” on their vocational decision. The data indicates that for the sample group in the final year of Study One fathers had less influence over their daughters’ vocational decision-making than did their mothers: (28.5%).

In the first year 29% of the control group believed their mothers had “a fair amount” to “a great deal” of influence and 20% of this group perceived their fathers
as having the same degree of influence. By the third year of the study the perceived
degree of vocational influence of control mothers (18.3%) diminished whereas
control fathers (18.3%) remained relatively constant.

These findings differentiate between sample and control in the relative
importance of parental influence and would indicate that the sample father’s influence
was not as important as that of the sample mother. Paternal influence for the sample
per se was still more important over the three years than it was for the control cohort
however. Paternal influence is elucidated in Study Two. The subjects in this cohort
had poor Home self-esteem and expressed self doubt. Retrospectively this was
attributed to perceived pressure from fathers as well as a desire to please him.

*Perceived interest in daughter’s vocational decision-making of parents with high
status careers.*

It is reported that well-educated parents have high educational and vocational
expectations for their children (Tomlinson-Keasey & Little, 1990). It would be
reasonable to suppose therefore that such parents would have high expectations and a
high degree of interest in their offspring’s vocational choices.

For the purpose of this study the information was collected through an
examination of the demographic information relating to the occupation of the mother
and father in the DMQ. Parents with the generally accepted high status occupations of
medical practitioners, specialist medical practitioners and lawyers were identified and
observed in relation to their perceived degree of interest in the vocational decision-
making of their daughters. The categories “a fair amount” of interest and “a great
deal” of interest were collapsed into one grouping. Twenty-nine subjects from a
possible sixty-three in the sample group believed that their parents had taken a high
degree of interest in their vocational choices. Within the control group twenty-five
subjects from a possible forty-nine students perceived their parents’ interest to be
important. Parents having high status careers were then extracted from this data.
Within the sample, six fathers were medical specialists or general practitioners. The daughters of five of these men believed their fathers showed a considerable amount of *interest* in their vocational choices. Of the three lawyer fathers in the group, two of the daughters believed that their fathers were *interested* in their vocational plans. One mother with the high status career of lawyer was represented as having a high degree of *interest* in her daughter’s decision-making. The one specialist medical practitioner was also perceived by her daughter as having the same high degree of vocational *interest*.

Within the control group, four of the fathers were general practitioners or specialist doctors. All four daughters believed that their fathers were very *interested* in their career choices. High status occupations were represented by three mothers, two medical practitioners and one lawyer. The lawyer’s daughter believed her mother had a large degree of *interest* in her vocational decisions as did the daughters of the medical practitioners. These observations do suggest that high status parents tend to take a considerable degree of *interest* in their daughters’ vocational plans. The *interest* does not appear to be exclusive to the high-ability group but rather high status parents in general. Interest does not necessarily translate into influence however.

*Perceived interest in career decisions of teachers over time.*

The literature pertaining to the vocational *influence* of teachers is conflicting. An Australian study by Teese (1997) concluded that teachers and counsellors had very little influence on the career choices of Australian high-school children. Conversely, another Australian investigation examining the influence of teachers on girls studying information technology found teachers to be very important influencers of career choice (Price 1998).
As shown in Table 4.24 (p 97) there was no statistical difference between the groups over the three years of Study One. A review of the Bar Chart in Figure 4.18 would suggest that there was little influence at all within either cohort, only 7.9% of the sample and 8.2% of the control group believing that their teachers had “a great deal” of interest in their vocational decision-making. Consistency between the groups also was evident when 41.3% of the sample and 44.9% of the control cohort indicated a belief that their teachers had “some interest” in their vocational choices. There was no significant change in this overall stability over the three years of the study. Such findings would appear to corroborate those of Teese (1997).

Perceived interest of teachers in government and non-government schools.

One of the issues arising from the literature is that of the perceived interest of teachers in different school settings (Olszewski-Kublius & Scott, 1992). Currently in Victoria there are 16025 government schools and 695 non-government or independent schools accommodating just over one-third of the student population. Government schools represent a wide socio-economic catchment. All of the independent (non-government) schools in this study were relatively wealthy. Although none of the government schools could be viewed as being disadvantaged, in comparison to the independent schools they would be regarded as being less affluent.
An earlier study by Olszeweski-Kublius and Scott (1992) in which students from more disadvantaged perceived that they received less vocational guidance from their teachers was used to develop insight into the current study.

**Figure 4.19 Comparison between government and non-government schools (%).**

As shown in Figure 4.19 when the categories “a fair amount” and “a great deal” of interest were collapsed, 25% of the independent school students and 21% of the government-educated students believed that their teachers took “a fair amount” or “a great deal” of interest in their vocational decision-making. When a $t$-test was computed there was no statistical difference between the groups ($t = -1.17$, $p = .244$). This result, constant over the three years does not support directly the findings of the 1992 study by Olszeweski-Kublius and Scott. The suggestion may be one of degree however, with the schools in this investigation not being at the same level of disadvantage as those in the 1992 study.

*Perceived influence of teachers in career decision-making over time.*

As indicated in Table 4.25 (p 97) no statistical difference in perceived teacher influence was found between the groups throughout the three years of Study One. In fact the frequencies identify a marked similarity.

**Figure 4.20 Perceived influence of teachers over the three years (%)**
Although teachers in general, and career teachers in particular, generally were nominated by the students as their primary vocational advisors, this advice did not transfer into vocational influence. The percentages in Figure 4.20 show that influence of “a great deal” was nominated by only 6.3% of the sample and 4.1% of the control group. In years two and three no student in the control cohort believed that their teachers had had “a great deal” of influence over their vocational decisions. Within the sample 33.9% believed that their teachers actually had had “very little” influence on their career decision. Likewise, 33.3% of the control group believed that their teachers had “very little” influence on their career decisions.

_Actual suggestions of career options by teachers over time._

As shown in Table 4.26 (p 98) the actual vocational suggestions of teachers were not statistically different between the groups in the first and the third year of Study One. In the second year there was a statistical difference however (t=.26, p<0.1).

_Comparison between vocational views of self and teachers over time._

The results of the t-test shown in Table 4.27 (p 98) indicates that there was no statistical difference between the groups in the first year of the study. In the second year of the study however the views of the teacher and subjects were statistically different. The percentages in Figure 4.21 suggest that in year one 39% percent of the sample cohort and 42% of the control group believed that their teachers views and theirs were “not at all different” from their own. A widening gap between the expectations of their teachers and their own was reported by the sample over time.

_Figure 4.21 Comparison of views of teachers and subjects over the three years (%)._
The overall results suggest that neither group believed that their teachers took a great deal of interest in their vocational trajectory. Although the vocational views the teacher held for the student were not particularly different from their own, the girls believed that their teachers did not greatly influence their career choice.

*Perceived interest in career decisions of friends over time.*

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent (Csikszentmihalyi & Larson, 1984; Muus, 1997). In as much as there is a need for recognition and approval among peers the adolescent looks to his or her friends for approval and a feeling of commonality (Festinger, 1954; Webb, 1993). When the young person is focusing on vocational decision-making however the peer group does not appear be as influential.

The data pertaining to the perceived interest and influence of friends is presented in both graphic and tabular form. In Table 4.28 (p 99) a significant difference between the groups in the first year of Study One is indicated. There was no significant difference between the groups in years two and year three however. It has been suggested that an adolescent’s peer group and/or their friends would exert influence over the vocational decision-making of their friends (Buescher, 1991) and it could be anticipated that the girls would perceive that their friends may have considerable interest in, and influence on, career choice.

**Figure 4.22 Perceived interest of friends over the three years (%).**
In Figure 4.22 frequency data presented the Bar Chart can be examined. In the first year of Study One, perceived interest of friends was split into two dimensions “some” to “a great deal”. Of the young women in the sample cohort 30.1% believed that their friends had taken “some” to “a great deal” of interest in their decision-making compared to 38.7% of the control group. There may have been a difference in the perception of friends per se as friends out of school and friends at school could be viewed differently. Although Social self-esteem was lower for the sample than the controls the high-ability girls may have perceived that their school friends were not interested. Over the three years of Study One these perceptions changed slightly for both groups as 33.3% of the sample girls and 32.6% of the control girls assumed their friends took “some” to “a great deal” more interest in their vocational decisions.

*Perceived influence of friends in career decision-making over time.*

An examination of Table 4.29 (p 99) and Figure 4.23 show that both groups believed their friends had very little influence over their actual vocational decision-making that is, over what career they chose. Table 4.30 (p 100) shows no statistical difference between the groups in the actual vocational suggestions of their friends over the three years. Neither group believed that their friends’ vocational suggestions were particularly important.

Figure 4.23 Influence of friends over three years (%).
Actual suggestions of career options by friends over time.

The percentages observed in Figure 4.24 suggest that in the first year of the study only 6.3% of the sample and 8.2% of the control believed that their friends’ suggestions were “very important”. This perception remained relatively constant over the three years of Study One. Although it did appear to become more important for the control group in year three, it was not statistically different (t=-0.95, p=0.344).

Figure 4.24 Actual vocational suggestions of friends over the three years (%).

Comparison of views of self and friends over time.

Overall the vocational viewpoint of subject and friends differentiated the experience of the sample group from that of the controls. Table 4.31 (p 100) indicates that when a t-test was applied the comparison between the subjects’ and their friends’ career thoughts was statistically different in the first and second years of Study One. Although a marginally larger group of high-ability girls than control (Figure. 4.25) believed that the views of themselves and their friends were “a great deal” different there was no statistical difference between the groups in the third year.

Figure 4.25 Comparison of self and views of friends over the three years (%).
In year one frequencies indicate that 33% of the sample cohort believed that their friends’ views were “not at all different” from their own. Of the control group, 55.3% believed that their friends vocational views were “not at all different” from their own. The results were similar in the second year of the study. This would suggest that the peers of the highly able group did not agree with their friends’ vocational choice to the same extent as the peers of the control group. In year three however there was no statistical difference between the groups as friends assumed dissimilar views to all girls in the study. The views of the young women and the views of their friends in both groups diverged.

*Perceived importance of media role models.*

When a *t*-test was applied this dimension was found to be statistically different between the groups in the first year of the investigation only (Table 4.32 p101). Over the next two years of the study there was no longer a significant difference between the groups.

**Figure 4.26 Importance of media role models in year one of the study (%).**

An examination of the Bar Chart (Figure 4.26) in the first year of the study suggests that 76.2% of the sample and 63.3 % of the control group believed that the influence of media role models on their career choices was of “very little importance”. When the categories, “a fair amount” and “some” were collapsed,
11.1% (n=7) of the sample compared to 30.6% (n=15) of the control group believed that role-models were influential. No student in either group believed that the influence of media role models was “most important”. The control group appeared to assign more importance to the influence of media role-models than did the sample. Although there was no statistical difference between the groups in the second or third year of the study, these perceptions remained relatively constant over the three years.

**Summary of data.**

The relative influence of the variables mother, father, teachers and friends was examined so that research question relating to the relative importance of the variables could be addressed.

*What variable is perceived by the subjects as having the most influence?*

The frequencies for two categories of influence, “a fair amount” and “a great deal” were collapsed to provide a clear pictorial representation of the data. The results are summarized in both graphic and tabular form in Figure 4.27 and Table 4.33.

**Figure 4.27 Relative influence of the variables (%).**
Table 4.33 Relative influence of the variables in year one (%)

<table>
<thead>
<tr>
<th></th>
<th>N=63</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>N=49</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>17</td>
<td>2.556</td>
<td>1.254</td>
<td>0.158</td>
<td>14</td>
<td>2.556</td>
<td>1.254</td>
<td>0.181</td>
</tr>
<tr>
<td>Father</td>
<td>16</td>
<td>2.323</td>
<td>1.315</td>
<td>0.167</td>
<td>10</td>
<td>2.574</td>
<td>1.281</td>
<td>0.187</td>
</tr>
<tr>
<td>Teacher</td>
<td>9</td>
<td>2.210</td>
<td>1.189</td>
<td>0.151</td>
<td>9</td>
<td>2.292</td>
<td>1.202</td>
<td>0.174</td>
</tr>
<tr>
<td>Friends</td>
<td>5</td>
<td>1.984</td>
<td>1.024</td>
<td>0.129</td>
<td>8</td>
<td>2.208</td>
<td>1.220</td>
<td>0.176</td>
</tr>
</tbody>
</table>

Of the four variables discussed, mother, father, teachers and friends the analysis would suggest that for both groups teachers and friends have the least amount of influence on vocational decision-making. It would appear that of the four variables, mothers assume a similar degree of importance in the perceptions of both the sample and control groups. The mother is perceived as slightly more important than the father within the sample cohort only. Within the control the reverse is found, the father’s influence is recognised as having more importance than the mother. In Study Two however the retrospective perceptions of the high-ability young women would reverse these.

Although the influence of teachers and friends assume considerably less importance than parents for both groups, teachers and friends were perceived by the control group as being relatively more influential. These findings remained relatively constant over the three years of the study.

The subjects were asked to nominate anyone or anything else that had influenced their vocational decisions. Thirty-one students, fifteen high-ability and sixteen controls specifically nominated their own interests and/or “inspiration”, as influencing their vocational path. Other influencers were school marks, work experience, and other family members.
Summary and discussion of results.

Study One was conducted over a three year period. The CSEI, the VPI and the DMQ were administered to the subjects in the first year of the investigation. In the second and third years the DMQ only was posted to the girls in the study. The results were reported in the order of administration, firstly the CSEI, secondly the VPI and thirdly the DMQ. Differences between the groups were identified through $t$-tests. Cross tabulations examined relationships and frequencies were computed to give more insight into the evident differences and similarities.

The demographic comparison between the two groups was on the basis of the place of birth of the parents and their occupations. There were important similarities on the origin and the occupational status of the parents of both sample and control. This would indicate that demographics were not the cause of observed differences.

Self-esteem was compared using a $t$-test for independent samples. No significant difference was found between the groups on the sub-tests, General, and School self-esteem. There was however a significant difference between the groups in the sub-scales Home, Social and Total self-esteem.

Studies have found that high self-esteem predicts early career choice and conversely students with low self esteem delay vocational decision-making (Casey & Shore, 2000). In this investigation it was observed that measured high self-esteem did not predict early vocational decision-making in either the high-ability or the control groups. Students with low self-esteem within the control group were still able to make viable vocational decisions. When the longitudinal aspect of the study was taken into account a steady increase in the ability to make a career choice was observed within the sample. Conversely there was a degree of uncertainty within the control group as their career choices changed from a definite vocational choice to undecided over the three years.
Interpretation of this data needs to take into account the lack of formal examinations in earlier years of Victorian secondary education resulting in unrealistic expectations. The data were collected toward the end of the school year and may be reflective of the lower-than-expected results at school. This in turn would have contributed to limited options and a more realistic approach to vocational choice for the controls. In contrast the high-ability became more confident in the viability of their career options.

Much of the missing data in the third year of the study came from the control group. This could be attributed to a perception on the part of the girls that because their vocational aspirations had not been realized they believed that their occupations were not creditable. Indeed they may have simply lost interest in further participation.

The VPI identified strong vocational interests in the *Investigative* and *Enterprising* categories for the sample with *Realistic, Artistic, Social* and *Conventional* interests evenly spread among the students in both groups. A larger group of control students held *Social* interests than did the sample. When the highest individual RIASEC score was extracted, the *Investigative* category was constantly the most represented for the sample group. *Enterprising* interests were the next most selected. Within the control group *Enterprising* was the most represented with *Artistic, Social* and *Investigative* interests assuming a similar measure of importance.

Early career nomination and final career choice was similar for subjects within both groups choosing professional careers as this group remained relatively stable. There was a slight shift from young women in the sample who nominated para-professional occupations to managerial careers. In comparison a small percentage of young women in the control cohort with early nominations in the professional category ultimately chose careers in sales and service.

Although in only a few instances did daughters nominate the same occupation as those of their parents, career congruence was evident. The ASCO categories did not discriminate sufficiently between disparate professional occupations however to identify meaningful information in regard to differences. Overall the girls’ vocations
were in the same general category as that of their parents. For the sample, one important exception was in the managerial category. One quarter of the sample fathers were administrators but only a small percentage (4.8%) of their daughters selected managerial positions.

High $M/F$ scores on the VPI predicted non-traditional vocational choice for the sample group. Approximately half of the sample had high scores on the $M/F$ scale of the VPI. More than half of this group selected non-traditional vocations those normally associated with male-dominated professions. In Australia many such vocations for example medicine, law and engineering are still seen as male dominated. Because university entry requires very high VCE scores in these areas of study, high-status careers would be viewed as being appropriate for the intellectually-able girls. This phenomenon may account for the relatively high proportion of high-ability girls who are encouraged to select vocations viewed as non-traditional. Within the control group however students who had high $M/F$ scores still chose traditional career paths.

Findings obtained from the DMQ data established that although high-ability girls had high vocational aspirations pertaining to further study and expectations of a stimulating career there was no association between these high vocational aspirations and positive self-esteem. Indeed their measured self-esteem was lower than the control group. The control group had higher self-esteem scores but lowered vocational aspiration. It could be speculated that the control girls in Study One may not have quite the same academic pressures placed on them to succeed. This group may have more moderate aspirations and thus higher self-esteem. Conversely the sample may have experience self-doubt, underachievement and pressures from teachers and parents.

The third question relating to vocational aspiration - that is expectations of promotion - was not significantly different between the groups until the third year of Study One as it appeared that neither group was prepared to predict so far ahead. In the third and final year however most of the subjects had left school and were either
studying tertiary programs, in the workforce or unemployed. It would appear to be feasible for them to now observe potential advances in their chosen vocations.

The question relating to career advisors found that the primary advisors for both groups were career teachers, parents, friends and people in industry. Further investigation in Study One found career teachers to have had a limited influence on the vocational choices of both groups of subjects. Although they were the primary advisors they appeared to lose their influence as the investigation progressed.

The DMQ was constructed to identify and track those variables influencing vocational decision-making across time. Differences between the groups were associated with vocational aspiration, friends’ interest, mothers’, fathers’ and teachers’ vocational suggestions, the views of mother and daughter and the influence of media role models. By the third year there were only two areas of statistical difference. These related to the fathers’ interest in career choice and expectations of advancement in the chosen vocation.

Parents assume a similar degree of importance in the perceptions of both the sample and control groups. Although initially the fathers’ interest was similar for both groups, by the final year of Study Three the sample believed that their fathers had more interest in their vocational decisions.

The findings suggest that of the four variables, teachers and friends have the least amount of influence on vocational decision-making. Although teachers were the primary advisors for the girls in both groups this it did not translate into vocational influence for either group. In the first two year of the study only there was a significant difference between the groups in the interest and views of the young women and their friends with friends assuming more importance for the controls. In Study Two however the retrospective insights of the high-ability young women would reverse these perceptions.

Media role models were seen by both groups as having little influence. It could be argued that the limited vocations portrayed by young females in the media
did not contribute in any way to their career decisions. Indeed it may not be ‘cool’ for the schoolgirls to admit in a survey they were influenced by television and movies. Retrospectively there was some acknowledgement of media influence however.

The subjects were asked to nominate anyone or anything else that influenced their vocational decisions. Other family members, work experience and the media were listed as having some impact on vocational choices for some of the girls in both groups. A high percentage of young women in both groups however nominated themselves and/or their own interests. This particular construct of ‘interest’ may be viewed as internalised avocation. Sometimes this was expressed as “inspiration” or “a liking for” a particular vocation or pursuit. The strong relationship between ‘vocational interest’ measured by the VPI and the girls’ ultimate career choice is important and is addressed in Studies Two and Three.

Study Two introduces a temporal aspect to the investigation where the factors influencing vocational choice and its stability can be observed retrospectively. Study Three is an explication of the most important of the findings arising from Studies One and Two as they pertain to a specific cohort.
Chapter Five

Study Two: Results and Discussion

Career-related decisions are the result of an ongoing learning process that includes interactions associated with self-esteem and interest as well as the traditional engagement with family, friends and school in the community in which the young women live. A more reliable view of factors impacting on vocational choice can be obtained if the inquiry addresses influences as these interact over time (Grant et. al., 2000). The aim of Study Two was to examine in greater detail the viability and stability of vocational decisions arising from data analysed in Study One. This process involved determination of current tertiary majors, degree completion status and retrospective views of schooling and vocational influences.

For the purpose of Study Two qualitative data in the form of ten case studies selected from the sample of Study One were used to obtain descriptive information about the vocational trajectories of the subjects. During Study One these subjects were completing their last years of school education. The second phase of the study explores the experiences of highly able females who are still involved in the educational process in the tertiary context.

In as much as Study Two is an extension of Study One, research questions associated with the vocational trajectory of high-ability young women, and linked to the impact of time were addressed and viewed in the context of retrospectivity.

- Did vocational interest measured on the VPI reflect final career choice?
- Was there a change in the relative influence of the variables?
- Which variable was perceived by the subjects as having the most influence?
- Is vocational direction stable over the six years?

The focus therefore is longitudinal. Further, techniques of micro-analysis could be used to examine all the findings suggested by Study One. A further level of analysis experiences unique to case study methodology can provide a more holistic
view of the subject as there are some forms of investigation that cannot be undertaken by quantitative studies that simply isolate predetermined variables. The researcher is then able to develop and validate theories by utilizing the rich anecdotal data made possible by qualitative methodology. There have been important qualitative studies in the area of the gifted: for example Hollingworth’s (1942) case studies of twelve highly gifted children, Grant et al’s (2000) analysis of the career related decisions of college women and Kerr (1991) and Rimm’s (2000) retrospective studies of gifted and/or successful women.

Three years post Study One the author contacted twelve participants from Study One who had been formally identified as being gifted and who had experienced both single-sex and co-educational settings. The young women also had been involved in provisions or programs for high-ability students whilst still at school. They were consequently were invited to be part of a follow-up investigation. The subjects in Study Two had responded to the original questionnaire (DMQ) consistently over the three years of Study One. They lived in the same regional Victorian town and had attended both single-sex and co-educational schools. Of those students who responded positively to the researcher’s request, ten could be contacted regularly. These subjects had all graduated from school either three or four years previously.

The author interviewed the subjects in person, by telephone, or in the case of two of the young women who had moved to another state, by e-mail. The data were analysed in two ways. Firstly the quantitative data drawn from Study One in the form of the VPI, the CSEI and the DMQ were combined with the qualitative data in Study Two extracted from the semi-structured interviews, to develop an in-depth profile of each of the subjects (Appendix C). Secondly, the data have been analysed using pattern-making and triangulation methods that involve checking and synthesising information collected from different sources. The researcher designed a chart so that the data from Study Two could be transcribed and considered in light of Study One (Appendix D). The data identified consistent themes and important patterns and trends across a six year time frame.
The following Table 5.1 is a diagrammatic representation of the narrative found in each case study. An x represents the presence of the variable of influence. As such major points at which the data were consistent can be identified. “Yes” or “No” was used to indicate whether or not vocational choice was the same as the original findings in Study One. The following observations are a summary of the information taken from the case study profiles found in Appendix C. A more detailed matrix is to be found in Appendix D.

Table 5.1 Simplified matrix of variables influencing vocation (post school).

<table>
<thead>
<tr>
<th>Influence</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RG  CA  TC  JC  FN  AR  FB  MF  NK  KW</td>
</tr>
<tr>
<td>Mother</td>
<td>x      x      x      x      x      x</td>
</tr>
<tr>
<td>Mother modelling</td>
<td>x</td>
</tr>
<tr>
<td>Father</td>
<td>x-ve   x      x-ve   x      x      x      x-ve</td>
</tr>
<tr>
<td>Father modelling</td>
<td>x</td>
</tr>
<tr>
<td>Teachers</td>
<td>x      x</td>
</tr>
<tr>
<td>Friends</td>
<td>x      x      x      x</td>
</tr>
<tr>
<td>Affirmative Action</td>
<td>x      x      x      x      x      x      x      x</td>
</tr>
<tr>
<td>School Atmosphere</td>
<td>x      x      x      x      x      x      x</td>
</tr>
<tr>
<td>VCE Results</td>
<td>x      x      x</td>
</tr>
<tr>
<td>Self-doubt</td>
<td>x      x      x</td>
</tr>
<tr>
<td>Interest</td>
<td>x      x      x      x      x      x      x      x</td>
</tr>
<tr>
<td>Gifted Programs</td>
<td>x      x      x      x      x      x      x      x</td>
</tr>
<tr>
<td>Media</td>
<td>x      x</td>
</tr>
<tr>
<td>Same as original career</td>
<td>no     no     no     no     no     no     yes    no     no     no</td>
</tr>
<tr>
<td>Change of direction</td>
<td>x      x      x      x      x      x      x      x</td>
</tr>
<tr>
<td>Trying to please parents</td>
<td>x      x      x      x</td>
</tr>
<tr>
<td>Chance factors</td>
<td>x      x      x      x</td>
</tr>
<tr>
<td>Role models</td>
<td>x      x      x</td>
</tr>
<tr>
<td>VPI profile match</td>
<td>x      x      x      x      x      x      x      x</td>
</tr>
</tbody>
</table>
The influence of the variables, mother, father, teacher and friends.

The interest, influence and vocational suggestions and views of the mother, father, teachers, friends and the media are the salient variables in this investigation.

**Mother**

Study One results suggested that mothers have marginally more influence over their daughters’ vocational aspirations than do their fathers. In Study Two the analysis of matrix data identified seven of the ten students as reporting that their mothers had been of more consequence in their vocational decision-making.

The dimensions of this influence differed between parents however. Maternal inducement generally was less obvious and demonstrated positively through modelling and encouragement. In contrast paternal pressure was more overt and was expressed by the subjects as trying to please him.

Four of the seven believed that the nature of maternal influence was apparent and was established either by positive encouragement or indeed pragmatism. Of these four, one subject mentioned specifically that her mother mediated her career direction by enabling her to experience a particular career option at her mother’s place of work. These four subjects specifically alluded to the importance of their mother’s emotional support. One subject believed that her mother’s support and encouragement, demonstrated by taking her to university open days, influenced considerably her vocational path. Another believed that her mother’s suggested career options, encouraging her daughter to make “a wise choice” resulted in her pragmatic career choice. “Mum said that there was a demand for teachers and it was a ‘wise option’. Teaching is not a long term choice for me though as I want to end up in management consultancy” (Case Study No. 2). The data represents a more overt form of maternal influence which can be interpreted as directly interventionist and indicative of the
findings of Kerr (1991) as the subject gives up her hopes and dreams for conformity.²⁵

The fourth highly able young woman had lost confidence in her academic ability. In retrospect, she attributes this to the Chronic Fatigue Syndrome she suffered in Grade 10 at high school. When she left school she joined a bank and attempted data processing. Some time later she applied successfully to university to study natural science. Her mother works in an IVF clinic. A visit with her mother to the clinic resulted in changing her vocational direction from natural sciences to reproductive science, a decision with which she is very happy. “My mother works in an IVF clinic. She took me to work where I met many interesting people” (Case Study No.1).

Father

No girl acknowledged her mother’s influence as being negative in any way. Of the seven subjects who reported a positive maternal influence, four believed that the negative influence of their father had far more impact than that of their mother’s positive influence on their final vocational choices. Two of the three girls who reported no maternal influence at all believed that they were negatively influenced by their fathers however.

In Kerr’s study of eminent women it is reported that gifted young women are likely to be influenced by their fathers more so than by their mothers (Kerr, 1991). The results of Study One would suggest that the influence of both parents was similar with a slight tendency towards the mother being more important. Of the data collected twenty-seven percent of the sample at that time believed that their mothers had the greater influence in their vocational choices and twenty-five percent believed that their fathers were more important.

In Study Two however, when the high-ability young women were able to reflect on their vocational trajectory, eight of the ten subjects believed their fathers’

²⁵ The subject is currently living in the U K and pursuing her initial career choice.
had influenced them considerably. It is important to note that this influence was interpreted by the young women as both negative and positive. One participant believed that her father through his direct modelling behaviour and encouragement was of the utmost importance in the progression of her vocational trajectory. The fact that he took her on hospital rounds with him from an early age influenced her decision to study medicine. “Dad definitely, mainly by exposure, doing hospital rounds with him. He strongly encouraged me in that area” (Case Study No. 4).

Father’s influence was not entirely positive however. At least four of the ten subjects now understood that their decisions were made to please their fathers. “In hindsight I was just trying to please my father. My father is a doctor” (Case Study No. 5). These girls sought to gain paternal respect and approval. One of the subjects referred to negative experiences. This negativity was expressed through overt disapproval and constant harassment on the part of her father. She reported that her father’s continual nagging “you are going to be a doctor aren’t you” (Case Study No.10) completely turned her away from her initial career choice of medicine. She subsequently became a speech pathologist. “At the time he had a huge influence on me and I felt very pressured. He does not remember doing this but I can.” Another young woman reported that “I only changed to law to please my father” (Case Study No.9).

Teacher.

The results of Study One suggested that teachers generally, and career teachers in particular, initially had considerable interest in the subjects’ vocational choices. This interest did not translate into significant influence on the vocational decision-making of the young women however. The results from Study Two appear to substantiate this finding. Eight out of the ten subjects believed that their teachers played no significant role in their vocational decisions. On the other hand teachers’ behaviour, positive and affirming, or conversely negative and destructive, were cited as particularly influential dimensions in the vocational decision-making process of the remaining two young women. One subject believed that her teacher’s positive
comments, “because you’re good at writing “(Case Study No.2) encouraged her to apply for a tertiary place in journalism.

The second girl believed that her teacher actively discouraged her from a particular career path. This subject gained extremely high T-scores on both the Investigative and M/F scales of the VPI and had wanted to study medicine from a young age. In relation to teacher input she believed her vocational decision was influenced negatively. “I will just say that the most doubt I had about making the right decision would have been when a teacher to whom I was quite close said that she couldn’t see me being a doctor” (Case Study No.8). This lack of encouragement from an admired teacher caused self-doubt. She did not pursue medicine and what she referred to as her “passion” of becoming a doctor. Instead she took up the less intellectually rigorous study of anatomical science although still within the area of her interest.

Friends.

The theory of social comparisons suggests that individuals respond to a powerful drive to compare and evaluate the opinions of peers rather than those of someone different from themselves (Csikszentmihalyi & Larson, 1984; Fiske & Taylor, 1991). The findings from Studies One and Two appear not to substantiate this conjecture when specifically applied to career choice as both the high-ability girls and the control cohort did not believe their friends influenced them a great deal.

Only one subject from the ten participants in Study Two cited friends or peers as being of some significance in the course of her career decision-making. Even this influence was indirect. She reported admiration for the high achieving professional families of her friends encouraged and motivated her. albeit with a qualification “My friends all have high achieving professional families and I want to attain to the highest academic levels that I can without taking away from my social life” (Case Study No. 6).
School.

According to the Bronfenbrenner model, industrialized society is conceptualized into three external systems in which human development takes place. These are the Microsystem, the Exosystem and the Mesosystem (Bronfenbrenner, 1986) in which are nurtured social values and life expectations.

The Microsystem especially recognizes that although the family is the principal context in which the psychological development of children occurs, other settings and environments influence that process. The school environment is one of these and its impact on the socialization and development of the adolescent is immense. In May 1987 the Commonwealth of Australia Schools’ Commission issued ‘The National Policy for the Education of Girls in Australian Schools’. This report recommended changes to ensure girls and boys similar opportunities to succeed in school. In recent years this policy has focused attention on increasing the rates of female participation in a wider range of subjects. Girls have been encouraged to broaden their horizons and take up subjects that would enable them to study vocations seen to be traditionally male oriented.

Such overt encouragement in the school setting was recognised by seven of the girls in this study. These subjects expressed the view that the affirmative action policies within their schools did indeed play a significant role in their vocational choices. There was however a crucial difference.

The girls had all experienced both single-sex and co-educational school settings. All the subjects believed that at the time of their schooling, their co-educational schools did not have the same commitment and values towards female students. Eight of the ten girls expressed the belief that their single-sex school gave greater support and encouragement than did the co-education environment through a ‘girls can do anything’ attitude. “We were always encouraged to be our best” (Case Study No.9). “I never though that there were any limitations to my career aspirations” (Case Study No. 1). “My (single-sex) school was very important to me in establishing
confidence and although I may still have doubts about my intellectual capabilities, I feel it gave me a lot of confidence to do what I thought was best” (Case Study No. 8).

The majority of co-educational independent schools in Victoria are boys’ schools which have accepted the enrolment of girls over the last twenty years. The ethos of many of these schools still is essentially that of a boys’ school. “I had considerable encouragement at the girls’ school. I became less ambitious at the co-ed school - the girls were less ambitious” (Case Study No. 9). “My final years of schooling were at a co-educational school where girls were expected to act in a very different way” (Case Study No. 7).

**Media and role models**

Although the influence of the media in our lives in general is immense, the results from Study One indicated that its influence on vocational decision-making was not recognized consciously by the girls. This observation was mirrored in Study Two where only two of the ten participants reported that they were influenced directly by the media although in differing ways. One developed a vocational interest through watching a television soap opera/drama about the life of a country doctor in Victoria. “I’d always wanted to do medicine from the time I used to watch A County Practice on television” (Case Study No. 9). It is of interest to note that in the original Study One the same girl answered item 18 “How much influence have female role-models in the media had on your career decisions?” as “of no importance at all”. This girl suffered from Glandular Fever during the time of her father’s negative influence. Her unwillingness to recognise the influence of the media may well be associated with the apparent stress in her life at this time. The pattern of illness and paternal pressure appear to be an aspect of this study. Certainly the link between stress and physical illness is now recognised in orthodox medicine.

The other subject was influenced by reading about the lives of successful business women and women in politics. “I like to read about successful Australian women who have started businesses and women in politics” (Case Study No. 6). She too had attributed no importance to media influence in Study One. This subject
reported that neither parent had influenced her career choice but that she alone was responsible for her vocational direction. Such an observation would propose that it was only in retrospect that at least one subject was prepared to admit to being influenced by the media. As this study indicates it may have been perceived by the subject as not being ‘cool’ for a bright girl to admit to watching TV soaps. As a result the sources and effects of media influence are unclear.

**Stability of the vocational trajectory.**

Academically talented students have been found to change majors (courses) more often than average students and tend to show less stability in their interest patterns due to multi-potentiality and multiple interests (Kaufmann, 1981; Kerr, 1996; Kerr & Erb, 1991). These contribute to an inability or reluctance to focus on one particular vocational direction.

Such a phenomenon was substantiated by the results of Study Two. Only one of the ten participants in Study Two is studying or working within her original vocational choice. Another is following a closely related career path. For a variety of reasons the remaining eight subjects have changed career options. No consistent pattern was identified by the subjects for these changes in vocational direction. Only four of the ten students who appreciated that they had chosen the wrong career path could be identified as multi-potential. Having number of vocational options available to them was not articulated as an issue; rather the need to address alternatives. Other reasons expressed were being unsuccessful in being accepted at university to relinquishing “romantic notions”, failing their course or simply changing their minds after realizing that they were not suited to their chosen option.

Self-doubt and adjustability also have been given as major reasons gifted young women modify and change their career dreams throughout life (Kerr, 1991; Noble, 1989). While no single variable in instability was consistent in the data self-doubt did emerge as an important issue.
Self-doubt

The occurrence of nine changes or modifications in vocational direction can be observed within the triangulated data. The origins of these are likely to lie in a number of debilitating environmental experiences such as illness, perceived pressure from their fathers, or it may have been a function of self-imposed pressure of school performance as they struggled with career indecision and the resultant anxiety. Consistent with the literature self-doubt was seen being a major cause of career modification and change.

The responses from all self-doubters stressed the importance of paternal influence. Three of the five girls identified retrospectively that they were trying to please their fathers although only one acknowledged directly that it was her father’s constant pressure and nagging that caused her to chose a career in order to please him and not herself. She subsequently changed her focus when she left home to study at university. The low Home self-esteem scores of these subjects predictably reflected the home situation.

Self-doubt was expressed by five of the girls in Study Two as negatively affecting their vocational trajectories. The susceptibility to self-doubt is not unidimensional however. Three of the subjects attributed their lack of confidence to the direct result of illness in the last years of formal schooling. Whether self-doubt was a direct result of illness, or the reverse, is arguable. These three also cited parental pressure on the part of their father as being an important facet in vocational choice. The stress related conditions of Chronic Fatigue Syndrome, Rheumatic Fever and Glandular Fever respectively caused school absences and lower marks resulting in loss of faith in their academic progress “I did not think I would get good enough marks. I had Chronic Fatigue Syndrome in Grade 10” (Case Study No. 10). Given that stress causes physical illness it is possible to argue that illness may be an indirect result of perceived parental pressure.

A lack of confidence in intellectual ability also caused self-doubt. Even though a scholarship winner and a desire to be a doctor most of her life, one girl
attributed her change in vocational focus to a teacher who told her “you’re not suited to be a doctor”. She believed this comment undermined her self-confidence. This concurs with Kerr’s observation that “Destroying the early emerger’s passion may not be easy, but it is done by belittling talent or interest” (Kerr 1991a p.89). Although in retrospect she recognised her mother as having supported her, at the time of her schooling she was not at all influenced by her parents. Two of the participants believed that their expected or actual results in the VCE influenced their ultimate career choice. Both respondents doubted their ability to attain high rankings that would enable them to be accepted into the tertiary course of their choice. “I had bad study habits and I coasted at school. I didn’t know how to study.” (Case Study No. 3). Of these two, one student did take a less intellectually rigorous option at university. She gained high marks in her first year and transferred to her first option the following year. “My results in science were so good at the end of first year (university) I was able to transfer to medicine” (Case Study No. 9). The other girl worked in industry for a year then was accepted by the university to study in her chosen discipline, medicine.

For these subjects self-doubt was certainly debilitating during the process of their vocational decision-making. Retrospectively all of the subjects were able to articulate the reasons for their self-doubt and to develop strategies over time to overcome it.

**Educational Context**

The literature proposes that intellectually able students in special programs for the gifted may have high self-esteem which, in turn, may influence vocational choice (Feldhusen, et. al., 1990; Webb, 1998). Also identified is a flow-on effect from high self-esteem observed to lead to early vocational choice and the formation of a strong vocational identity.

All of the ten subjects had been involved in enrichment programs for highly able students during their schooling. These programs comprised organized university-run studies in particular areas of interest such as a physics course at a local university.
and/or school-based activities that would be classified as “provisions” rather than as dedicated programs for the gifted.

Participation would impact on the context of the school as it could be supposed that the students could feel alienated from their classmates through their involvement in “pull-out” provisions. The issues surrounding how high-ability students experience their educational environment can be observed by exploring measured self-esteem. In this context School self-esteem and Social self-esteem. Measures of self-esteem from Study One were extracted and included in the case studies and, apart from one subject, Total self-esteem was relatively positive. A more detailed view of self-esteem in the social context was obtained by reviewing the Social self-esteem scores for the ten subjects. Only one subject had high Social self-esteem. Four of the ten had medium self-esteem and three had low Social self-esteem. The one student with particularly low self-esteem in retrospect attributed her poor self-esteem to illness during Grade 8. The one subject with high Social self-esteem specifically mentioned that her involvement in a University enrichment program as opposed to simply school provisions influenced directly her vocational choice by fostering a deep interest in an area in which she previously had no knowledge. As a result of this, she studied commerce.

These findings suggest although self-esteem may be enhanced by participation in genuine gifted programs where the students experience the validation and support of true peers, it is not necessarily improved by participation in gifted provisions which cater for the high-ability student for often only a short period of time and with a cohort not necessarily made up of true peers.

**Construct of interest and the stability of vocational choice.**

In vocational psychology interest is taken to mean a ‘preference for’, ‘liking of’ or ‘enjoyment of’ specific roles and/or activities associated with the context of work. Interests and competencies create a particular personal disposition leading one to think, perceive and act in special ways. For example, people who resemble the Social type, seek out social occupations such as teachers, social workers and ministers.
The VPI profiles accurately reflected the original career choices of the ten girls in Study Two. Indeed eight of the ten young women are still undertaking career paths that reflect their original vocational interest profile. The current vocational choices or areas of study for the remaining two girls no longer exhibit a VPI match although both subjects have expressed the intention of further vocational change which corresponds to their profile.

In Study One the subjects who choose non-traditional careers showed strong congruence with their Holland type. These subjects seem, consistent with Wolfe and Betz (1981) to predict more accurately the preferences of women who have resisted the influence of socializing agents which encourage traditional female vocational goals. Women identified by the Holland code of Masculine/Feminine as being more masculine personalities and more likely to choose non-traditional vocations were described in the VPI as being mature, shrewd and less strongly influenced by occupational stereotyping (Wolfe & Betz, 1981). Although the vocational trajectory had changed for nine of the ten subjects three years post Study One the choice of non-traditional occupations had not. At the end of Study One six of these ten had selected non-traditional vocations as their final career choice. Eight of the ten young women now were working in or studying non-traditional occupations. Thus although half of the subjects did not have high M/F scores eight of the ten chose non-traditional vocations eventually.

In this study the term interests arose from the data and hence they are interpreted as something wanted or, as one girl stated, “inspiration”. Each of the respondents in Study Two referred to interest as having played a decisive role in her decision-making process. Two of the students expressed the view that interest was the single most important regulator of her vocational choice. The fact that eight of the ten girls were studying or working within the interest area identified in the original VPI is important. It is relevant to note that although the current vocational choice of two of the subjects did not match their VPI profile, the initial vocational choice of one did. This particular student did not gain a place at university in the area of her interest. She elected to study in the area of social science. She does believe however that ultimately she will return to her first career choice of journalism. The other subject
started studying within her interest area but put “romantic notions of being a writer into perspective” and took up policy research because she believed it was more practical. Both subjects had ambitions of being a writer. In the case of these two however vocational interests gave way to realistic considerations.

Although other factors such as pragmatism and/or negative paternal influence identified by the girls had impinged upon these subjects’ decisions and caused them to change their vocational trajectory both subjects have indicated intentions of a further shift in direction. This change ultimately may result in them pursuing their original vocational interest.

The retrospectively of this study, albeit only three years, will pick up current life influences such as relationships, living away from home and new friendships. A number of dimensions can be seen to relate in the decision-making process as no girl nominated one single component of influence in isolation.

The construct of interest was found to be the common motivation among all of the young women. Interest is not a uni-dimensional concept however. It can be viewed as simply a ‘liking for’ something or a ‘passion’, or as one student from Study One referred to it, an ‘inspiration’. One of the principal findings of the study was that interest formation or ‘internalised inspiration’ is shaped by the environment and nourished by efficacy - that is a belief in one’s ability to undertake a particular vocation. The data identifies efficacy in those subjects who believed that they were suited to a particular career path and pursued it. Similarly a lack of it was a deterrent and an obstacle to overcome.

*Who or what assumed the most influence in the vocational trajectory.*

Interest was aroused by a number of influences within the subjects’ environment. Although not all nominated someone or something as having fostered their interest it could be directly or indirectly attributed to environmental effects: for example, parents, teachers, friends and the media. Parental influence was seen as both positive and negative; positive in that it was their parents who had fostered their
interest in a particular vocational trajectory by encouragement and modeling, negative in that it was perceived by others as modifying their interests in order to please their fathers. Three young women specifically identified their own interests as having the most influence on their vocational choices. These influences comprised peer interactions as well as the wider impact of the media.

In examining the data at a qualitative level, an important aspect of this study has been the change in the vocational trajectory. Only one of the ten subjects has steadfastly pursued a linear vocational trajectory from an early age a phenomenon referred to as “early emergence” (Kerr 1991a p.89). The subject had high aspirations as well as the support and guidance of both her parents. She believed that although her teachers showed interest in her career choice they did not influence her in any specific way. She recognized that it was her father’s modeling as well as work experience in a hospital which fostered her interest in the vocation and encouraged her focus. She had no self-doubt and was always confident that she would obtain the high marks necessary to win a place at the university to pursue her chosen vocation. The VPI accurately predicted the vocational interest of this highly able girl.

Of the nine students who changed vocational direction four identified chance factors as being of some important in the course of their decision-making. Of these four, three subjects also cited self-doubt as a contributing factor impacting on their vocational trajectory. Only two of these girls actually attributed their change in vocational direction directly to chance factors however. After two years of career indecision one of these two left the state to be with her boyfriend. When she was forced to seek a job in a large stationery company she found her ultimate career path laid out for her. She was selected to train as a manager within this organization.26. This subject was initially reluctant to be part of the interview process in Study Two. She believed that she had done nothing remarkable with her life and that the other girls in the study would all have “great professional careers”. This attitude is very reminiscent of the subjects in Kerr’s 1991 study. When assured that other participants also had made vocational changes she agreed to be included in the study. The other

26 Currently (2002) this subject has returned to university and is studying commercial law her original vocational choice.
young woman had a chance meeting with a stranger in a hotel. From this conversation she too changed vocational direction.

The vocational aspirations expressed by the ten subjects while involved in Study One were extracted and integrated into interview narratives. Three of the four self-doubters had very high vocational aspirations. This could well be an effect of the validation of the ability through perceived school support and involvement in gifted programs of eight girls. All of the ten subjects in the qualitative investigation were involved in gifted programs, albeit these programs could be considered enrichment provisions rather than programs. It is expected that high-ability individuals in gifted programs are less likely to have self-esteem and adjustment problems. This was not found to be the case for the girl in Study Two who still experienced vocational indecision and self-doubt. Indeed the gifted provisions as opposed to programs may well have contributed to her feelings of alienation from her social peers.

Affirmative action policies which facilitate a positive school atmosphere where female educational and vocational aspirations are fostered, appears to be an important factor also. Eight of the ten girls reported that the affirmative action atmosphere and policies in their respective schools influenced their vocational choices by encouraging them to embrace a “girls can do anything attitude”. The girls believed that they were supported in their plans to undertake non-traditional occupations.

It is of interest to observe what seems to be a contradiction. That is, although all the subjects believed their schools had equal opportunity policies which encouraged and supported them, they all experienced vocational indecision. It would seem that perceived support from the school did not assist with adequate vocational choice and that other influences impacted more strongly on the vocational process.

Self-doubt, father’s influence and/or trying to please him, chance factors, illness, as well as the media role models have been identified as factors influencing change in vocational direction for the high-ability subjects in this investigation.
Summary of results.

Study Two is an explication of Study One. Qualitative data in the form of ten case studies were obtained from a semi-structured interview protocol. In this study the short-term retrospectivity of three years suggests a more complex picture of vocational-choice than that associated with accounts from a long-term vantage point. Although there are difficulties in drawing strong conclusions several aspects appear to be salient.

The patterning to emerge from this data would suggest that parents are instrumental in the career decision-making process of highly able young women. No subject viewed their mother’s influence as being negative. In Study Two mothers, either indirectly or by positive encouragement of their daughters, or direct modeling influenced career choices. The girls’ fathers’ support seems to be an even more important dimension. The father’s influence was not entirely positive however as the subjects sought to gain his respect and approval by considering career options that would please him.

The stability of interest as measured by the VPI which translated into occupations within the young woman’s interest area was a central finding and relevant to the use of the instrument. Although nine of the ten high-ability girls in the qualitative study have changed career direction from their original vocational choice, only two have occupations which no longer reflect their original VPI profile.

Influences affecting the change in hopes and dreams include unsuccessful attempts at university, becoming more pragmatic, failing their course or simply changing their minds after realizing that they were not suited to their chosen option. Although the girls could be identified as multi-potential none of them attributed their change in vocational direction to their multi-potentiality.

When the data were triangulated several factors pertaining to vocational instability were found to be consistent for the high-ability young women in this investigation. These variables included self-doubt, father’s influence and/or trying to
please him and illness. These initially affected a downgrade in vocational aspirations although the subjects were able to develop strategies to overcome problems. Of the subjects who changed vocational direction, chance factors and the role-models in the media were found to have influenced the vocational decision-making processes also.

The orthodox medical field now appears to acknowledge the link between the immune system and the nervous system long recognised by ‘alternative’ medicine. In the quantitative study the girls indicated that their fathers had considerable interest in, and influence on, their vocational decisions evidenced by trying to please him. Stress related illnesses such as Chronic Fatigue Syndrome occurring during the last years of school were reported. Illness may well be a result of the stress associated with living up to fathers’ expectations.

Vocational aspiration was high among the girls involved in gifted programs at school that they believed supported them through equal opportunity policies. This would appear to be a reasonable outcome.

When the girls were asked to nominate respectively the factor that they believed had the most influence over their vocational trajectory, they seemed unable or unwilling to choose just one dimension. It would be reasonable to believe that because all the girls mentioned the concept of interest it was recognised by them as being an important issue impacting on vocational-decision making. Interest in this context cannot be seen as a concept essentially intrinsic in nature and unrelated to environmental issues. Indeed the subjects’ final career choice at the end of Study One did reflect their broad vocational interest prompted by parents, friends, the school atmosphere, role models in the media as well as people at work in the wider community.

It can be seen that post high school other factors impacted on the subjects career choices and the stability of their vocational trajectory was compromised. When the subjects entered tertiary study their vocational interests were refined and fundamentally shaped by the wider environment in which they currently functioned.
Chapter Six

Study Three: Results and Discussion

The purpose of Study Three was to test the findings of the earlier studies in a particular environment that was available to the researcher: a single-sex school with a dedicated accelerated program for the gifted. Thus Study Three is an explication of the most important of the findings arising from Studies One and Two. The particular contribution of Study Three therefore is to examine the salience of the vocational decision-making process in relation to the interest, influence, suggestions and views of the variables as they interact with a specific environment. As such the findings are applied from a wider context to a specific environment.

One aspect within the school was identified by the subjects in the earlier studies as being particularly significant in the course of their vocational decision-making. The School self-esteem of the subjects in a single-sex setting was found to be more positive than that of the subjects in co-educational settings. Recognition of the support received via affirmations and encouragement encountered in their all girls’ schools was expressed retrospectively by the subjects in Study Two.

Another finding relevant to the educational environment was the context in which teaching and learning occurred: that is, the participation in special programs or provisions for the gifted. The Study Three sample is atypical in Victoria however. There are few schools with a selective program for high-ability students. The school represented in Study Three has a dedicated accelerated program for girls selected on the basis of measured high intellectual ability.

The association between intellectual ability and musical talent is well documented and this school has also a strong music and art curriculum. The school swing band for example is well-respected and quite famous in school music circles.

27 At the time of data collection there were 20 such schools in Victoria, only two are all-girls’ schools.
The schools’ uniqueness is characterised by the fact that in the regional town where Study Three took place there is only one government single-sex school. On such a criteria their school environment could be held to be supportive of girls with high intellect.

**Data collection and analysis**

During August in the year 2000 fourteen students from a single-sex government secondary college in a large regional city in Victoria, Australia, became the subjects of this multiple case-study. The participants in Study Three had completed the first four years of secondary school (Grades 7-10) in three years. At the end of Grade 10 the students progressed into Grades 11 and 12 which comprise the Victorian Certificate of Education (VCE). The participants in this study were in Grade 12, the final year of secondary schooling and taking classes within the mainstream.

Twenty ALP students in Grades 11 and 12 were invited to be part of the study. Of the twenty girls, fourteen subjects from Grade 12 obtained the parental permission required by the Ethics Committee of the University of Melbourne. The data was collected when the researcher visited the school. The Coopersmith Self-Esteem Inventory (SEI) the Vocational Preference Inventory (VPI) and a revised version of the Decision-making Questionnaire (DMQ) were completed by the subjects. The administration of a modified DMQ to take into account the findings in Studies One and Two was an option outlined Chapter Three. It included more questions relating to female role-models (Appendix B). In Study One the issue of female role-models was addressed but only in relation to the media. In the years immediately preceding Study Three as part of a policy of equal opportunity and affirmative action this particular school regularly invited successful women to speak to their students. In view of this it was considered to be appropriate to include more questions relating to female role-models in Study Three.

Data collection for Study three was identical to that of Study One. All the data were collected during one regular 40 minute class period. So that anecdotal evidence
could be considered, the girls were encouraged to write comments in the margin of the DMQ. The data was collated into case-study profiles (Appendix C), a matrix (Appendix D) and a table of parent/daughter occupations (p 148).

The Decision-Making Questionnaire (DMQ) established factual information about the parents of the participants in the study. Questions relating to birthplace and occupations of the parents were asked to establish the demographic profile of the population. Although questions directly associated with socio-economic status were not asked, the location of the government school, within a large regional city in Victoria, would place the families in lower to upper middle class strata of Australian society.

The majority of parents were Australian born. Other parents were born in Europe, Canada, USA and Asia. Likewise the majority of parents had professional or para-professional careers consistent with the ASCO classification. Administrators, clerks, sales and service personnel were also represented. Four parents (two mothers and two fathers) were not employed outside the home.

The contexts of home and school have been identified as being salient factors in this investigation. With this in mind triangulation and pattern the Study Three data has identified important similarities between the subjects in these environments (Appendix D). Eight subjects nominated their parents as being particularly influential in the course of their vocational trajectory. The Total self-esteem scores of the eight were positive and all but one reported particularly high Home self-esteem scores. Four of these subjects also credited their friends as being influential in their decision-making. Only one of the girls did not have positive School self-esteem. She had low Home self-esteem also. Although these subjects generally had high School self-esteem only two of them reported the constructive influence of teachers.

Of the five students who reported teacher influence however only two of them alluded to parental support. The other three referred to the affirmative impact of teachers together with interest, on their vocational decision-making. Although all
three had positive Social and School self-esteem their Home self-esteem scores were very low.

These findings suggest the existence of a dichotomy associated with Home and School self-esteem and depend on relationships within. It would appear that parents or teachers, but not both, were seen by the subjects as being important during the path of their career choice.

**The influence of self-esteem on vocational aspirations.**

The results of Studies One and Two had found that high self-esteem is not a precursor to high vocational aspirations nor did it predict early vocational choice - a phenomenon also observed in Study Three. At time of data collection early in the school year only three girls had no career direction. All three decided upon a career direction by mid-year. Of these three, two subjects had high Total self-esteem and the remaining subject had poor Social and Home self-esteem.

As in the earlier studies high self-esteem was established by total scores on the SEI (=>75). Apart from one girl the other subjects (n=13) had positive self-esteem. Eleven from a possible fourteen students had strong vocational aspiration. Of these eleven students, seven combined high self-esteem with high aspirations. As it was found in the earlier studies the subjects lacking measured high self-esteem still had high vocational aspirations.

The Study Three findings in relation to vocational aspiration mirror those of Study One, the sample believing that further study and stimulation in their ultimate career was of importance but that projection of advancement in their chosen career was viewed as being less important. One student expressed the view that advancement was of no consequence at all and was certain that further study and advancement were not relevant to her vocational plans as she was looking to a career in the music industry.
Study Three mirrored the earlier studies where vocational interest measured by the VPI was highly indicative of vocational choice. Like the earlier studies the Investigative sub-scale was highly represented with the other interest categories spread relatively evenly. Although high $M/F$ scores did predict non-traditional vocational choice in Study One it was by no means exclusive. Within the cohort only two of the fourteen students had high $M/F$ scores. The Study Three finding is of interest due to the high number of girls ($n=13$) in this group ultimately choosing non-traditional careers; those vocations generally dominated by males. The remaining eleven of the twelve subjects who did not have high $M/F$ scores still chose non-traditional career paths. The only traditional vocation chosen was that of a teacher/librarian. As the parent patterning tended toward very traditional careers this result is very likely a function of the influence afforded the girls by a nurturing all girls’ school with strong supportive atmosphere together with the sanction of a high-ability peer group.

As in Study One, the findings indicate that although the actual occupations nominated were not necessarily the same as their parents except in the case of two girls, career choice congruence is apparent in as much as there is a strong relationship to general occupational types. The data is summarised in Table 6.1 p148. Two of the girls chose vocations in the same area as their parents. One girl whose mother was a structural engineer and whose father was an electrical engineer also intended to become a civil engineer. Another of the highly able group whose parents were both musicians also wished to become a musician.
Table 6.1 Parent daughter career continuity

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Mother</th>
<th>Father</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>engineer</td>
<td>engineer</td>
<td>engineer</td>
</tr>
<tr>
<td>12</td>
<td>musician</td>
<td>musician</td>
<td>musician</td>
</tr>
<tr>
<td>13</td>
<td>research assistant</td>
<td>lecturer</td>
<td>politician</td>
</tr>
<tr>
<td>14</td>
<td>manager</td>
<td>manager</td>
<td>computer science</td>
</tr>
<tr>
<td>15</td>
<td>psychologist</td>
<td>chaplain</td>
<td>architect</td>
</tr>
<tr>
<td>16</td>
<td>housewife</td>
<td>lecturer</td>
<td>computer science</td>
</tr>
<tr>
<td>17</td>
<td>librarian</td>
<td>scientist</td>
<td>media production</td>
</tr>
<tr>
<td>18</td>
<td>teacher</td>
<td>stock agent</td>
<td>human biology</td>
</tr>
<tr>
<td>19</td>
<td>nurse</td>
<td>clerk</td>
<td>advertising-photography</td>
</tr>
<tr>
<td>20</td>
<td>secretary</td>
<td>teacher</td>
<td>RAAF intelligence officer</td>
</tr>
<tr>
<td>21</td>
<td>homemaker</td>
<td>unemployed</td>
<td>astronomer</td>
</tr>
<tr>
<td>22</td>
<td>manager</td>
<td>scientist</td>
<td>teacher/librarian</td>
</tr>
<tr>
<td>23</td>
<td>manager</td>
<td>unemployed</td>
<td>music teacher</td>
</tr>
<tr>
<td>24</td>
<td>music administrator</td>
<td>unemployed</td>
<td>marketing advertising</td>
</tr>
</tbody>
</table>

As in Study One there was no match found between daughters taking up managerial positions and their manager parents. Of three mothers and one father holding managerial positions no high-ability daughter chose administrative or managerial careers. They did select occupations such as university lecturer, computer science and advertising/marketing however. As the pathway to higher managerial occupations tends to be obscure the subjects may well have been unsure of a direct route although their chosen occupations could ultimately lead to administrative positions however.

Only two of the fourteen girls were adamant in choice aversions. One did not wish to become a nurse like her mother because “it was too hard” (Case Study No.19) and the other wanted to “shake off the farm girl image” (Case Study No. 18) of her farmer father. Continuity of choice was found when seven of the mothers and nine of the fathers held occupations classified as professional and nine of the daughters also wished to study within the professions. One student with professional parents chose to study the para-professional category of media production.
To whom would you go for advice?

The young women in both the earlier studies (Two and Three) sought vocational advice from parents, career teachers and people in the industry (job). It was only in the preferred order of the advisors that differed slightly. Professionals or friends in the industry assumed slightly more importance in the role of advisor than either career teachers or parents for the high-ability young women in Study Three. This finding could be a result of direct exposure to important females and the opportunity to interact with them as this school’s policy of inviting people from industry especially women as guest speakers at school forums and assemblies.

Although teachers and parents jointly were nominated by four students as advisers their advice was embedded within the concept of interest. One girl expressed the view that her international studies teacher was her advisor “because that’s the area I’m most interested in” (Case Study No.13). Another subject nominated “my teacher and people who have interests similar to mine” (Case Study No 17).

Parents in isolation from other sources were nominated by only two subjects. One of the two students specifically nominated her father because “my dad wants me to go into a well paid profession” (Case Study No. 14). Her father is a managing director and she subsequently chose to study computer science. The other subject nominated her mother who was in a related profession. It would appear at the time of schooling the subjects did not view the parents as being particularly knowledgeable about vocational selection. In contrast the Study Two subjects were prepared to state retrospectively that parent influence, albeit not always positive, was important.

The environment as a function of the perceived interest in, and influence on, career decisions of mother, father, friends and role-models.

For the purpose of this investigation, the criteria for “high status” occupations for parents in the quantitative study was medicine or law and associated professions.
Experience in Victorian education suggests that parents with professions in these sectors within this particular regional city generally send their daughters to one of the several non-government independent schools. Parents in Study Three were part of a socio-economic demographic more representative of the Australian middle class with occupations comprising teachers, musicians, managers, nurses, scientists and university lecturers.

Similar to the patterning in Study One parents were not seen to have exerted a great deal of influence over vocational decision-making. It would seem that the subjects’ recognition of parental influence may be driven by the simple fact of individuation on the part of the adolescent. Its effect is difficult to quantify in a specific way. However the question of choice aversion to parental careers was not apparent in either study and so this factor as a function in the drive to individuate is unlikely to be the issue. The similarities found in Studies One and Three may be a function of the girls still being at school and subject to a perceived generational “gap” where parents are often viewed as being out of touch. In Study Two however the subjects’ maturity and further life experience enabled them to express a retrospective view in which parental influence was acknowledged.

As in the earlier studies friends had a limited influence on vocational decision-making. This is an interesting observation in the light of the perceived influence of the peer group on adolescents, and, particular this cohort of girls who have spent their high school years with class of highly able peers. Only four subjects expressed the belief that their friends had any influence at all in their vocational decision-making. The friends of the one subject who nominated her friends as having a great deal of influence on her vocational choice were currently involved in the industry to which she aspired, as were her parents. It is difficult to know if the friends would have had the same amount of influence if they had opted for different careers.

In Study Three there was a clear differentiation between role-models in the entertainment industry and visitors from industry. Although the young women were prepared to nominate a female role-model these did not necessarily influence vocational direction. Although one subject did say that “Women with important roles
really influence and inspire me” (Case Study No. 11) she had career congruence with both parents and so one could assume that her mother may have been one of those admired women.

What variable is perceived by the subjects as being the most important?

As it was in Studies One and Two the construct of interest was identified as playing a decisive role in their vocational choice. However the dimensions and sources of interest differed when the data were triangulated. Self, teachers and parents were all cited indirectly as contributing to interest formation. Although eleven subjects nominated interest as being an important aspect of their vocational choice six students nominated themselves and their own interests as being the single most important influence in their vocational decision-making. These generally were expressed as “skills or talents” or “knowing what I want”. Indeed their vocational choices of photography advertising, architecture and music certainly related to their skills. All had high Social self-esteem, a finding which could reflect the respect afforded to the girls for their clearly defined skills by their teachers and peers.

Four students nominated teachers and two nominated people in the job as having fostered their interest formation: “Teachers know my skills “(Case Study No. 22); “The only one who knows” (Case Study No. 21); “The international studies teacher got me interested” (Case Study No. 13); “Editing facilities at school developed my interest” (Case Study No. 17).

Two students nominated their parents as having fostered their interests, “My mother and god-mother supported my interests” (Case Study No. 18). The other student nominated her father as being the most important influence. “My dad wants me to go into a well paid job” (Case Study No. 4). This student, as did the four Study Two subjects, had relatively low Home self-esteem which could be viewed as a reflection of perceived parental pressure. She did nominate “work experience which developed my interest” as being another important influence.
Areas of difference

There were two important areas of difference between Study Three and the earlier studies. The specific context of the school and home impacted upon both of these - self-esteem and ultimate subject choice.

In general self-esteem scores for the Study Three cohort were considerably higher than those of the sample in Study One. Indeed the sub-scale School self-esteem was medium to high for the whole cohort. According to the CSEI manual, academic perceptions of self is a construct of the school environment. The School sub-scale in the CSEI addresses issues relating to self-attitudes in the environment of school and learning. The literature proposes that gifted students sometimes have better academic ‘selves’ than ‘social selves’. With this in mind it could be expected that those variables contributed to the high self-esteem of high potential students; girls in a single-sex school educated with a cohort of like-minded peers would have positive School self-esteem. Indeed the young women in Studies One and Two educated in single-sex schools had positive School self-esteem also.

In Study Two only two of the ten girls had very high Home self-esteem scores. In the light of Study Two findings indicating the negative influences of parental pressure this is not surprising. In Study Three however ten of the fourteen subjects had very positive Home self-esteem scores. This finding may be indicative of good inter-generational influences reflected by the similarity in occupation of parent and daughter in some cases. The girls in Study Three have been placed deliberately in a special environment for high-ability girls, one in which the parents would believe that commitment to their daughters’ education would be a priority. A harmonious interaction between the school and home is a likely result.

Social self-esteem was found to be poor among the subjects in Study Two. In Study Three however Social self-esteem was high. Seven of the fourteen subjects had extremely high scores. Both cohorts were educated at single-sex schools. At the time of data collection the major variable was within the school environment. The Study Three subjects had up until Grade 10 been educated with a supportive high-ability
peer group whereas the Study Two cohort was made up of high-potential students within a mainstream setting.

The high-ability girls in Study One believed that although teachers did make vocational suggestions that were seen as important they had very little influence over vocational decision-making. It could be expected that vocational guidance teachers in a single-sex school with a dedicated program for high-ability young women would be attuned to the girls’ needs. Although teachers were reported by four subjects as having the most important influence on the vocational choices, nine of the subjects attributed their teachers as having played some positive role in the course of their vocational trajectory. This was expressed as “I think my teachers have influenced me most…teachers are the only ones who know what I am good at and will excel in” (Case Study No.21).

In Australia high status/high income occupations tend to be those vocations requiring the highest university entrance (ENTER) score. Career congruence such as doctor/lawyer fathers having doctor/lawyer daughters was a finding in Study Two. Several of the Study Two parents held high status careers and daughters’ vocational choices too were broadly accepted as being in the higher status professions.

Despite this being an academic program for girls of the highest intellect no subject in Study Three chose to study medicine or law. The socio-economic status of the subjects’ parents as well as the school context is pertinent to this investigation (there were no parents with high status positions in Study Three) and should be taken into consideration when observing the relatively less ambitious vocational career choices of the subjects.

The subjects in Study Three were intellectually able girls at a school which could be expected to nurture high vocational aspirations. The actual advice of teachers who may have had social agendas is unknown and so the finding must be considered as a function of parental occupational status (income) being a determinant of vocational choice and needs to be examined further.
In Study Three the findings of Studies One and Two were applied to a specialised cohort. These mirror those of the earlier studies with the important exceptions being self-esteem and subject choice. Both of these were found to be a function of the educational and home context.
Chapter Seven

Discussion

The current study is the first of its kind in Australia. It is exploratory and breaking new ground in its emphasis on identifying the variables impacting on the vocational development of high-ability adolescent girls in Victorian schools. A subsidiary aim is to develop a model which encapsulates these variables.

The aim of Study One was to establish, in a systematic way, the existence of those external and internal variables identified in the literature as salient to the career choices of high-ability adolescent girls. The second aim of Study One was to ascertain whether these variables are peculiar to high-ability young women or to young women in general and thirdly to identify which, if any of these was most important. Examined in the CSEI, VPI and DMQ were variables identified in the literature as those which could be expected to impact on vocational choice.

The CSEI and VPI were administered in the first year of Study One only. Such data should be regarded as the most definitive as it was collected when all of the subjects were experiencing the pressures and modifications within the school environment impacting on their career decision-making process. Consequently only the data obtained from the DMQ was subject to change over time.

Study Two is an extension of Study One, its primary focus being to examine the stability of vocational direction over time. Three years post Study One ten of the sample subjects approximately 21 to 24 years of age were invited to reflect upon the career decisions they had made while they were still at school. The subjects were selected because all had been formally identified as being intellectually ‘gifted’ on objective measures. In as much as this research project addresses the school setting as a variable, the selection of the Study Two subjects was based also on their experience of both single-sex and co-educational schools within the independent education sector. Through a semi-structured interview process these subjects were asked to identify retrospectively the factors that they believe influenced their decision-making.
at the time. As these young women were still in the tertiary education system, or planning to return to it, they were able to discuss their vocational trajectory while it was still very relevant to them.

Study Three also is qualitative in nature in that it seeks to add depth to the original study by applying the findings of the two earlier studies and re-visiting the environmental and internal issues impacting on vocational choice. The selected cohort had been formally identified on standardised measures as being intellectually gifted. Their specific educational context was that of a government single-sex school where they had participated in an accelerated learning program.

The salience of the two environmental contexts home and school was a vital component of this investigation. The findings of the three studies will be synthesised, analysed and discussed as a function of these - firstly in relation to the general themes of self-esteem, aspiration and parents, teachers, peers, role-models and media and secondly as a response to the six research questions informed by the literature and which are the basis of this investigation.

In the first year of Study One all of the subjects were completing the last three years of school. Nine from a possible twenty variables were identified as being significantly different between the groups, high-ability and control. These were in the areas of Home, Social and Total self-esteem, aspiration, vocational views of mother, father and friends, the actual suggestions of mother and the influence of media role-models. In terms of external influences those variables differentiating sample from control did not remain constant across the three years of data collection. How the subjects viewed these influences changed, the sample moving toward a more independent assessment of their choices, the selection made by the controls demonstrating a closer approximation to that constructed by the parents and teachers around them.

In the third year approximately two-thirds of the subjects (n=67) had left school and were functioning within a wider environment which impacted differently on their vocational experiences. By year three if there was to be a distillation of a
particularly strong variable recognised by the girls as they viewed their future out of the school context it would be expected to remain constant. Indeed the data from year three could be expected to show the most significant variables. At the time of final data collection two variables remained constant. These were in the areas of vocational aspiration and the interest of fathers.

In the first year of the study the variation between the groups in the way they viewed themselves interacting with their environment was a major finding. Because self-esteem can be regarded as a gauge of self-relevant understanding, measures of self-esteem were used as indicators of how the girls in the study had experienced their environment within the home and school. When Total self-esteem was measured on the CSEI the sample expressed lower perceptions of self in regard to both the Home and Social situation than did the average schoolgirls.

Self-attitudes that are relevant to the immediate family and the home environment are reflected in the Home self-esteem subscale. This sub-scale consists of items such as “My parents expect too much of me”, “My parents usually consider my feelings” and “I usually feel as if my parents are pushing me”. For the high-ability adolescent girls self-esteem linked to the home environment was found to be less positive when compared to that of their average classmates. It could be expected that average schoolgirls may not perceive or experience the same degree of parental expectations of success being imposed on them as did girls of high-ability. “Apart from anything else my mother would kill me (figuratively). My entire family would be DISAPPOINTED (sic) and I’d get a guilt overload,” (anecdotal comment: subject No.31; Study One) was how one of the sample expressed her view of parental response to her career choice.

Similarly Social self-esteem also was found to be lower in the high-ability group than that of the controls. Social self-esteem is representative of how an individual views herself as a member of society. For adolescent girls the school is perhaps the most significant social context and the findings can be interpreted therefore as an indication of school experiences. In comparison, an important finding in Study Three was the high Social self-esteem of the high-ability girls, with only one
of the fourteen having a low score. The implication would appear to be that of how one is perceived by others: Study Three subjects educated with a like-minded cohort less exposed to the consequences of negative interactions within the school setting. When the gifted girl is being educated in isolation within a group of non-gifted classmates however, as found in Studies One and Two, academic achievement can be experienced as a threat and have social implications. The finding suggests therefore that the mainstream school environment will necessitate “smart” girls having to make behavioural concessions to fit into accepted norms at school or to stand firm and accept the consequences of their non-compliance resulting in a lack of social acceptance.

An important finding was the school (academic) perceptions of sample and control which were found to be similar. One would have expected the contrary: that bright girls recognised by their teachers - sufficient to have been nominated for the study – would have had a stronger sense of their academic ability, experience more strongly their sense of self as an achiever. They did not, as a group however, have more positive self-esteem than the average schoolgirls.

In analysing this finding there is another aspect of the study which may have contributed to a skewing of the data. There is to be found a potential modifier within the school setting as well as in the selection process of the students. One of the aims of the investigation was to examine as wide an educational environment as possible. To this end a sizable minority 42.9% (n=27) of the subjects included in the Study One sample were students in single-sex schools. These subjects educated a single-sex environment were found to have significantly higher School self-esteem than the high-ability girls in co-educational schools. Additionally, although the Total self-esteem scores were not significantly different between the single-sex and co-education subjects there was a trend toward the single-sex subjects having higher self-esteem overall. It would seem that positive measured self-esteem is likely to be a function of the single-sex setting which espouses validation and the opportunity to take up leadership roles within the school as opposed to the tokenism of such roles often found in many co-educational schools.
Looking to information available from micro-analysis in Study Two it was found that even though Social and School self-esteem were high for only a few of this cohort, seven of the ten Study Two subjects made reference to the support and encouragement they had received at an all girls' school setting. When interpreting the totality of these findings, it is suggested that other social and environmental influences impact on personal a sense of self and the view of others which, in turn, affect self-esteem. These do not appear to affect the choice of a future career of the intellectually gifted young woman however.

Another component would be found in the selection process of the subjects. Because all of the high-ability girls attending government schools had been identified on the basis of their academic success one would have anticipated that these intelligent girls would feel good about themselves, developing a positive self-concept as they interacted within their school environment. To the contrary however, half of the cohort answered ‘like me’ to the statement relating to school efficacy ‘I’m not doing as well at school as I would like’ and seventeen high-ability subjects answered ‘like me’ to the statement ‘I often feel upset in school’. In this context “upset” may allude to feeling unappreciated, pressured or indeed frustrated.

As a function of the study design closer observation of girls in special programs and provisions was made possible in the qualitative studies. The Social self-esteem of the subjects in Studies Two and Three should be considered in relation to their involvement in such activities. Of relevance therefore are the findings in relation to the self-esteem of the subjects of Study Three. These subjects attending a girls’ school and enrolled in a class for the gifted all had positive Total self-esteem with seven of the fourteen also having very high measures of Social and School self-esteem.

Although the Study Two subjects had been identified as being highly able and thus eligible to participate in provisions for the gifted, their mainstream school setting was preserved. As a result the circumstances did not contribute to identification with a like-minded cohort, a second variable likely to impact on self-definition and self-esteem. Of the two subjects having high Social self-esteem one was involved in a
university cluster program for the gifted in a particular area of personal interest. As such she would have been involved with a cohort of high-ability young people - albeit for a relatively short time. The other subject with high Social self-esteem was a scholarship winner. In addition she was very popular because of her sporting and debating skills. The remaining subjects having medium Social self-esteem measures were involved in provisions or “pull-out” programs within their schools.

The Study Three subjects were educated in a school which has an articulated program for high-ability girls grouped with had like-minded peers. Here too it would be expected that staff generally would be interested, knowledgeable and supportive, mediating both academic and social contexts. Such anticipated acceptance and validation experienced by the subjects could be seen to have contributed towards the high Social self-esteem of this cohort.

Girls in both sample and control groups nominated careers within the professional sector of the workforce. Such an unexpected finding would appear to have arisen from a combination of factors, primarily from an observed healthy self-esteem together with assessment procedures promoted in Victorian schools. Until grade 11 the classification of work is simply ‘satisfactory’ or ‘unsatisfactory’ and only in grade 12 are comparative scores introduced. In this assessment culture a student could easily develop an unrealistic understanding of her abilities, and of her future vocation. In the results of the study there is also the influence of equal opportunity policies in schools- illustrated by the following anecdotal comment. “We were all encouraged to pursue a university educations and professional careers – to be what you can be” (Case Study No. 7).

In making their choices however high-ability girls demonstrated more realistic appreciation of their decisions. It was this variable that set them apart form those of average ability. Identified were differing attitudes toward vocational aspirations, those of the controls in Study One lower than those of the sample. Two of the three questions from the DMQ relating to the dimension of aspiration differentiated between the groups. “I will do further study after school” and “I expect my career to be stimulating”. The controls did not attach such sentiment to their ideas about career.
The vocational choices of the sample were accompanied by high aspirations expressed in their sense of future commitment and expectations.

In year three the groups viewed their expectations of advancement differently. This change of attitudes toward vocational promotion within the sample could be attributed to the fact that those who continued to be involved in the study were either studying or employed. The girls now could project visions of promotion in their chosen occupation or field of study and so they now expected advancement. It could be argued that the young women who lacked vocational aspiration could be found in the missing data (n=33). However, this interpretation is questionable as only three individuals found within the missing data had low aspirations in the first year of the study.

Within the context of the home the variables pertaining to parental interest were perceived differently. In Study One the views of the both mother and father were statistically different between the groups in the first year of the study only. Although the control group generally perceived that their parents’ vocational views for them were similar to their own, less than a third of the high-ability girls believed that their parents’ views and their own views were similar or at all important. In both qualitative studies however, the influence of parents was a feature and is discussed under research questions.

Reflected in the data is the great degree of interest that parents had for the career choices of the sample. Although the sample subjects perceived themselves as having a more independent stance, in actuality parental interest was found to impact on their efficacy and how they saw and defined their abilities. This finding was clearly articulated by several subjects in Study Two where vocational expectations emanating from the parents of the high-ability young women, together with the expectations they had for themselves, were found to have fostered high vocational aspirations. The results suggest that the strong self-belief systems as well as the elevated expectations of parents “Just subliminal messages I guess” (anecdotal comment: subject No.29; Study One) outweighed other considerations, such as lower self-esteem. Parental interest could be viewed as an expression of their high
expectations for their daughters’ vocational potential. Thus the prospect of success appears to be transmitted to the young woman through the interest and/or encouragement of those significant others involved with her vocational choices.

Although the sample mothers appeared to have marginally more influence on vocational decision-making than did their fathers in Study One, patterning of the data in the later qualitative studies suggested that fathers had a more overt influence on the high-ability girls.

Parental occupational status has been identified in the literature as impacting on the vocational choice of high-ability girls. Career congruence with that of parents was high. Like the sample, the controls as a group chose vocations within similar categories also nominating careers in the professional or para-professional occupations and yet when the average group were asked specifically to comment on the expectation of further study their responses reflected in the DMQ were less enthusiastic.

The Study Two subjects also were found to have vocations of similar status to those of their parents. The parents of Study Three subjects did not have careers generally recognised as being high status with no Study Three girl having high status scores on the VPI. This finding would suggest the context of home was influential.

In the first two studies congruence between high M/F scores and the selection of non-traditional careers was pronounced. In Study Three non-traditional vocations were selected regardless of high M/F scores however. The majority of Study Three parents pursued traditional vocations and so this finding would seem to be a function of the school setting rather than the home.

The findings of the three studies indicate strong congruence between vocational interest measured by the VPI and final career choice. There were several aspects associated with home and school which would be regarded as giving shape to this finding. Although occupations selected were largely in the investigative category in the first two studies, the prevalence towards artistic vocations in the Study Three subjects could be seen as a function of either home or school or indeed both.
environments. The strong music/arts program at the school from which this cohort was drawn, together with musician parents represented in the group would support this view.

Also within the context of the school the vocational suggestions of teachers were found to be significant in the second year of the study only, the sample rating teachers as offering acceptable vocational suggestions. Overall their suggestions and views were found to be relatively unimportant for both groups. Although teachers in general, and career teachers in particular, were the first vocational advisors for many of the young people they were found to have minimal influence over the subjects’ vocational decisions. Several of the Study Three cohort generally believed that their teachers were interested in their vocational decision-making however and made valuable suggestions and influenced ultimate career choice.

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent. This observation in relation to the vocational expectations held for the subjects by their friends was more important for the controls in the first year of Study One only. Although girls in both groups believed that their friends’ views for them were not very different from their own, the perception of similarity was far more pronounced in the control group. This could be interpreted as evidence of cohesiveness of the controls within their social context. The average schoolgirls believed their friends’ views resembled theirs whereas the high-ability girls indicated a wider divergence from the views of their friends and their own occupational interests. As a result the actual vocational influence of friends did not appear to have an important function when the high-ability girls in this investigation focused on career choice.

Within the Macrosystem the media is a representation of social values within the community asserting a powerful but indirect influence on the individual. In terms of information obtained from Studies One and Two the role of the media as an influence on the vocational decisions of adolescents is inconsistent. Media persuasion was not recognised by the high-ability girls in Study One as being relevant to their career choices. In Study Two the media retrospectively was appreciated as impacting
on vocational choice. In Study Three the DMQ was broadened in the scope of its questions relevant to this variable and as a result the importance of media personalities became more apparent.

Most of the subjects were still at school during the first two years of Study One and it is a predilection of Australian school-aged students to watch television situational dramas or ‘soaps’. Certainly in the first year of the study the difference in attitude between the groups was widest, the control group assigning more importance to the influence of media role-models than did the sample. The balance of these perceptions remained relatively constant over the three years although not statistically significant. It is not clear whether such influence is a function of exposure to the media or to the intelligence of the subject as the media permeated both the home and school. The high-ability cohort may not have considered it to be intelligent behaviour to admit to adults that one is influenced by such programs which feature nurses, teachers and policemen as leading characters.

As the girls matured however their interactions with a wider range of media may well have become more sophisticated. In the print media for example they would be exposed to the views of female politicians, scientists and CEOs. It was a finding that two of the subjects in the second study were prepared to attribute importance to the media retrospectively by identifying a type of media interaction. It is relevant to note that the subjects did refer to a wider selection of role-model such as politicians, and scientists rather than solely to television entertainers. Both subjects were ambivalent toward any media influence in the course of Study One. Television programs targeted at a slightly older demographic also projected a wider vocational range for their female characters.

The findings of this investigation are discussed further by an analysis of the three integrated studies framed within the research questions.
Discussion of research questions.

Six questions were posed. These will be restated and considered on the basis of the results of the data collected from the seventy-seven high ability subjects represented in both the quantitative (S1 n=63) and qualitative (S2 n=10; S3 n=14) studies comprising this investigation.

What is the relationship between parental occupation and daughter’s vocational choice?

The occupations of parents have been identified as being an important indicator of the family’s socio-economic status impacting on the occupational choice of daughters. This found direct expression in such comments as: “I realized I wanted to work with people like my father did, healing them” (Case Study No. 4), and “I suppose my father, due to his career, has taught me it would not suit me. I would prefer to spend more time with my family than my father does” (anecdotal comment: subject No.47; Study One).

The quantitative investigation (Study One) found that although the actual careers nominated by the highly able young women were identical to those of their father and their mother in only a few instances, the girls did choose occupations from within the same broad occupational categories. Of the identical career matches, four were doctors, one an engineer, one an accountant, and one an architect. Choice aversion, that is an extreme unwillingness to take up their parent’s career direction, did not present as an issue in this investigation. Only two subjects were specific in their determination not to emulate their parents’ occupation. One subject did later take up study within the area of her mother’s vocation.

Using micro-analysis several influences were found to impact on the relationship between parent occupation and that of the vocational choice of their daughter. Of these, the most consistent appeared to be the status of the parent’s vocation and its gender appropriateness.
According to Holland (1985) high *Status* scores are indicative of vocational choices with high prestige ranking. Holland’s view was that they may also represent a “crude measure of the need for upward mobility” (p 9). Well-educated parents have been found to have high educational and vocational expectations for their children and a perceived pressure for highly able young women to choose high status careers has been recognised (Silverman, 1991). Half of the sample in Study One had medium to high scores in the *Status* sub-scale of the VPI.

It was a finding that five of the subjects in Study Two are pursuing what are regarded as high status (income) careers. Five parents, one mother and four fathers had high status vocations also. Only one of the five did not have either parent in a high status profession. The ten subjects in Study Two were found to have vocations with the same perceived status as their parents, or higher. Although only three girls nominated the same career as that of their father, that of a doctor or lawyer, the subjects were inclined to select careers that were commensurate with those of their parents. Where girls did choose the same career as their parent it was motivated often by a desire to please their fathers. This observation of daughters wanting their father’s approval as documented in this study and is consistent with those of Kerr (1991a).

An unexpected patterning emerged from the vocational choice of the Study Three subjects. It was unexpected in terms of the outcomes which would have been predicted from the experience of a specialised educational environment. No subject in Study Three chose a vocation viewed as being particularly high status. This finding could be interpreted as unusual in the light of their being identified as highly intelligent and involved in a program which arguably fosters high educational standards. Logically these school influences would flow on to high vocational aspirations and “drive for upward mobility” (Holland 1985). This is an important observation in that their parents did not represent high status careers such as law or medicine. Traditionally parents who are doctors or lawyers in this particular regional city generally send their daughters to one of the several non-government independent schools. The parents in Study Three tended to be part of a socio-economic demographic more representative of the Australian middle class however. Although one girl expressed directly “My dad wants me to go into an important, well paid
profession” (Case Study No. 14) it did not appear to impact on her vocational interests in terms of that profession being law or medicine. She ultimately chose computer science. It is a finding of this investigation that the Study Three sample did not select high status vocations. Consistent with this finding, no subject in Study Three had high Status scores.

The attitudes and influence of teachers associated with these girls advocating these professions is unknown. The question as to whether the teachers actively encouraged them to take up such vocations must be asked.

**Does self-esteem influence vocational aspirations and early vocational decision-making?**

Self-esteem can be a perception of how others view us. The premise is that self-knowledge and self-belief is more important than how we believe other see us. Therefore knowing and accepting of one’s self is the basis for an association between career efficacy and vocational aspiration.

This investigation has identified measured self-esteem as being lower for the highly able girls than for the control cohort. In both the quantitative and qualitative studies high-ability girls with low self-esteem were nonetheless found to have high vocational aspirations. Thus the results of the current investigation suggest that measured positive self-esteem is not a predictor of high vocational aspiration for high-potential girls and may not be at all relevant to their aspirations.

For the purpose of this investigation the ability to make a consistent vocational choice at Grade 10 was viewed as being indicative of early decision-making. The results from Studies One, Two and Three did not establish a strong link between high self-esteem and early vocational decision-making. Upon examination of students with poor self-esteem it appears that the average girls were still able to commit to making a vocational choice. This phenomenon may not necessarily be an effect of high or low self-esteem but suggests other factors such as multi-potentiality that cause career uncertainty in the highly able young woman.
A major finding of this investigation was career instability rather than difficulty in career choice observed in the career trajectory of the high-ability girls in Study Two. Nine of the ten girls attributed their continuing vocational indecision to a variety of inhibitors. Self-doubt, trying to please father and chance factors of illness impacted on their initial choice and subsequent change in vocational direction. No girl identified the availability of too many options as being the cause of vocational instability, nor was self-esteem identified as an issue for these young women. Indeed only one girl had poor self-esteem.

Half of the girls in Study Three, seven students from a possible fourteen, had high-self esteem scores in all areas. They had high vocational aspirations and at the time of data collection all but three had made a definite vocational choice. This comparatively high percentage of very positive self-esteem, aspiration and definitive decision-making could be seen as arising from their participation in a dedicated program for the gifted (Feldhusen et. al., 1990; Webb, 1993) resulting in a viable self-definition and self-belief.

**Does vocational interest measured on the VPI reflect final career choice?**

“Interest was the most important influence”
(Case Study No.3).
“I should have listened to the careers advisor after all”
(Case Study No.10).

The longitudinal aspect of this study was to observe any changes made in the vocational choice initially nominated and final vocational choice made three years later. The qualitative study afforded an opportunity to review the vocational choices of one group of high-ability girls after a six year interval.

The results of Study One suggest a strong degree of choice congruence when vocational interests transferred into actual vocational choices. Similarly when viewed together, the findings from the three studies indicate a strong affinity between
vocational interest measured by the VPI and final vocational selection in the
*Investigative, Artistic, Enterprising, Social* and *Conventional* categories. The
exception was within the *Realistic* domain. There was a small shift away from
*Realistic* interests identified by the VPI into *Enterprising, Social* and *Conventional*
occupations.

A far greater representation of *Artistic* interests was evident within Study
Three than in the earlier studies. The interest categories identified in Study Three
were found to be fostered by the student’s environment reflecting both home and
school influences. These were a strong music and arts program in which the subjects
were active participants. The occupations within the music industry of three of the
parents also contributed to their daughters’ vocational choice,

Based on the qualitative data in Study Two vocational interest measured on
the VPI in the first year of Study One remained highly predictive of vocational
choice. Six years later eight of the ten young women were studying or employed in
the areas of their original VPI broad interest profile. The actual vocations were not
always the same however.

Resemblance has been found between women who chose non-traditional
careers and their Holland vocational interest/personality type of *M/F*. Women with
high scores are more likely to have an interest in occupations dominated by men. In
this investigation however the high-ability cohort in all three studies selected non-
traditional vocations regardless of their *M/F* scores. Thus the findings of this
investigation would strongly support the premise offered by Kelly (1993) that real
progress has been made by gifted adolescent females in conquering the negative
effects of gender socialising on occupational self-efficacy and interest. In his study
Kelly had found that achievement was inversely related to interest in traditionally
female careers for high school females. High achievers appear to be less interested in
careers that may limit their professional growth, creative expression and personal
financial rewards. Similarly the gifted young women in this investigation tended to
convey less interest in traditionally female careers, no longer avoiding vocations seen
as only suitable for males.
The exception to this observation was in that of managerial vocations. Although managers make up a small proportion of non-traditional careers, few young women in the current investigation took up vocations in management. This would appear to be a reflection on the lack of female role-models in management and perception of a ‘glass ceiling’ within the Australian workforce. Although female CEOs could be viewed as an example of breaking the ‘glass ceiling, Australian women account for only 11% of executive positions. Of these 1-2% are top executives. Although the chairman of QANTAS is a woman, there may be a misunderstanding of how top management works and so the means by which she attained her high position in management is unclear.

The purpose of Study Two was to narrow the time span of retrospectivity inherent in existing studies when examining the issue of vocational choice. In doing so a major and unexpected finding was observed. The stability of vocational pursuit was by no means assured.

When examining initial career choice compared to final career choice in the quantitative investigation, Study One, there appeared to be a degree of stability over the three years for the sample. This phenomenon was not sustained in the findings of Study Two. Six years had elapsed since the girls had made an initial vocational choice. The progressive change in career options of nine of the ten subjects would be seen as significant. Only one high-ability young woman, the early emerger, remained focused on her original career. This suggests strongly that other influences must have assumed importance since the days of formal schooling.

When the quantitative and qualitative data (One and Two) were triangulated it was found that self-doubt was a major factor. The subjects reported that “I was too afraid I wouldn’t get in” (Case Study No.9), (Case Study No. 8). “The main doubt came from myself, as to whether I was actually smart enough” as well as trying to please father “He had a huge influence on me and I felt very pressured” (Case Study No.10) and “to please my father” (Case Study No. 5), as well as chance factors.

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including illness “A chance meeting in a pub with a speech pathologist encouraged me to change careers” (Case Study No. 10). It would appear that anxiety and pressure may well result in inappropriate vocational choices.

Of the nine students with career changes, only one did not have high vocational aspirations. This subject also had low self-esteem. She also stated an aversion to taking up her parent’s occupation. In Study Two she attributed her negative feelings at the time to illness and trying to please her father. Ultimately it was her mother’s modelling which encouraged her to embrace a career related to those of both parents.

The results of this investigation would support the work of both Kerr (1991) and Buescher (1985) pertaining to vocational development of the intellectually gifted. The vocational trajectory for gifted students would appear to be more complicated and susceptible to the pressures and opinions of significant others. Such complexity is not in choice, but firstly, in how choices are made, and secondly, how these choices are enacted.

Is there a change in the salience of the variables over the six years of the investigation?

Social influencers within the subject’s community or experiential frame of reference impact on vocational choices. Mothers, fathers, teachers, friends and role-models in the media have been identified as the most important of these socialisers. Tracing the shift, if any, from perceived interest to perceived influence to actual suggestions of career options expressed by those social influencers was a major focus of the study.
Mother/Father

This investigation found that for the sample only in Study One that mothers had marginally more influence over their daughters’ vocational choices than had their fathers. Over the next two years of the investigation the perceived influence of the mother diminished for the high ability girls.

An examination of the data six years later indicated a change in the perceived relative importance of the parents. In the qualitative studies fathers were acknowledged as assuming far more importance in their high-ability daughters’ vocational decision-making. Overall six out of ten subjects in Study Two reported that looking back they were more powerfully influenced by their fathers than by their mothers.

The retrospective perspective of life experiences of the Study Two subjects enabled them to express and develop a more candid view of their vocational decision-making. These subjects did attribute more influence to their parents than they had done in the earlier study. This influence was both negative and positive. The patterning suggests that the young women in Study Two had taken on a particular vocation firstly because they wanted to please their father and secondly the encouragement that the positive modelling that their mother had given them. As was observed in Study Two apart from one girl such vocations were later abandoned. The interpretation seems to be that paternal influence was direct whereas the mother had a somewhat indirect effect on her daughter.

Teachers

At the career teachers’ forum in Melbourne in 1996, educators were not strongly committed to the view that specialist careers teachers and guidance officers should be the only ones to help meet the career education needs of students. The findings of this investigation would suggest that this was a wise observation.
Teachers in general and career teachers in particular, were the first vocational advisors for many of the young people. This initial confidence of the subjects in their teachers did not appear to last. Subjects in Studies One and Two did not express confidence that their teachers were interested in their vocational choices nor that they influenced their decision-making to any degree. The highly able young women were just as unwilling as the control cohort to identify their teachers as having contributed to the course of their vocational decision-making. This could be attributed to the somewhat negative view that some adolescents hold toward their teachers. Also impacting is the likelihood that the students have an egocentric attitude preventing them from seeing their teachers as knowledgeable enough in the areas in which they wished to study.

Such a perception was not mirrored in Study Three however where there was a constant progression from perceived interest to perceived influence and actual suggestions of teachers. The cohort generally believed that their teachers were interested in their vocational decision-making, made suggestions and indeed were influential in their ultimate career choice.

An earlier Australian study by Teese (1997) found that those students who were in curriculum streams that are the least likely to lead into higher education are less likely to agree that school career teachers assisted them with their vocational planning. On the other hand those students who are in the curriculum streams that have the strongest links with university are the most likely to agree that the school helped them with their vocational planning. Although this was found not to be the case in Studies One and Two it held strongly for the girls who chose academic vocations in Study Three.

“I think my teachers had the most influence. They’re the only ones who know what I’m good at and will excel in” (Case Study No.21).

That these two studies are contradictory would seem to be a function of a specific educational environment. The specific attitude of the Study Three teachers could be assumed to be one of commitment to the education of girls in general and
gifted girls in particular. This obligation together with the feminist ideals affirmative action policies of the school are dedicated to shaping young women who will confidently be able to take their place in the workforce. The school hosts “employment interviews” when successful women from Soroptimist International conduct mock job interviews for the senior students. It would seem reasonable to believe that the teachers at this school would have a vested interest in the vocational decision-making of the girls. Hence Study Three is an example of attitudes and guidance principles within the environment differing from those of Study One.

Friends and peers.

It is generally accepted that the peer group and/or friends assume a large degree of importance in the lives of the adolescent. Different perceptions of the nature and extent of this importance are offered in findings from the quantitative and qualitative studies. When the young women in this investigation focused on vocational decision-making the interest, suggestions or views of friends did not play an important role in influencing vocational decisions of either the high-ability or control cohorts. This perception was not to change over the three years of the study for the highly able girls.

As young female adolescents tend to compare and evaluate their opinions and abilities with their peer group at school they are able to relate their performance with others of their level of aspiration. Logically high achieving young women would seek out other high achieving girls with whom to compare and evaluate their vocational aspirations. The gifted subjects in Studies Two and Three had different school experiences however. The first group comprised identified gifted in isolation - that is within the mainstream without the benefit of a like-ability cohort to validate them. The second group did have the support of a like-minded cohort.

Despite this the findings were consistent across the settings. The peers of the Study Three subjects also played a negligible role in influencing their actual vocational decision-making trajectory of their friends.
The Media, Role-Models and Mentors.

In its dissemination of social values and provision of role-models the influence of the media as an instrument of Bronfenbrenner’s Macrosystem is immense. The way young women compare themselves with others is reinforced constantly through the media. The manner in which a young woman should behave will be alluded to in all forms of mass communication both print and electronic. The question comes down to the context of “messaging,” firstly for intelligent girls and secondly for the careers such girls might pursue.

The many current articles referring to the motherhood versus career debate are one such area of influence on attitudes. The pervasive messages given to young women are subtle. The popular female lead in a recent episode of Neighbours a popular Australian “soapy” was in a dilemma. Should she fight against discrimination of pregnant women in the workplace or just accept it, drop the case, and continue on with her pregnancy? She decided not to continue with the discrimination litigation. “My baby is the most important thing”. The script of Neighbours is an option for study in Grade 12 in the Victorian Certificate of Education.

Similarly a caption in a Melbourne newspaper announced “Brainy, after a fashion”. “Olivia’s brains are obscuring her beauty”. Olivia, an attractive psychologist, was portrayed as a role-model, someone worthy of media attention. During the day Olivia is a fashion model. At night according to the article she “…slips into her moonlighting role as a psychologist.” The article related the fact that “far from fighting the bimbo-model stereotype when she’s at her day job, she can’t embrace it fast enough”. “It’s a nice change I don’t have to impress people with my mind”. “The old saying is true she reckons that you have to be smart to play dumb ...it’s so true you have to play the game.” The media is reflecting social values. Impressing with the mind is not as important as making an impact on with your

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29 Episode Thursday 22nd August 2001.
30 Melbourne Herald-Sun Saturday August 18th 2001
appearance. Play down your “smarts” and you too will be a person worthy of media attention (O’Connor, 2001).

In recent years new media programs have promoted women in assertive masculine careers. Female doctors and lawyers and politicians are now more commonplace. This broadening of acceptable female vocations promoted in the media could have enabled the girls in Study Three to relate more readily to role-models portrayed in the communications industry. Arguably the results of this investigation suggest that although high-ability girls are happy to nominate a female role-model as being reasonably influential in their lives per se these role-models do not assume a great deal of importance in their actual vocational decision-making.

It is generally accepted that mentors have a more overt influence on their protégés than do role-models. Mentors spend time with the young person guiding and encouraging their young charges, enabling them to think productively about their vocational plans, and ultimately to make focused decisions.

Much of the literature examining the benefits of female mentors for gifted young women comes from studies of college students or eminent adult women. Women themselves report increased self-confidence in their vocational capabilities if mentored by a female (Reilly & Welshe 1994; 1995). Mentoring of gifted students, as such, is in its infancy in Victorian schools. Mentoring “on line” using internet facilities to link young women with mentors is a very new concept. Some schools regularly invite speakers, often referred to as mentors, from industry to address their students. Unless the school is a girls’ school however, these presenters generally are men. There appears to be limitation in the way the area is being analysed and studied and what is actually happening in Victorian schools.

In Study One the question relating to the influence of role-models on vocational choice was explicit. The girls were asked to comment on the importance of role-models in the media in regard to their career decisions. The subjects were also encouraged to make anecdotal comments. Questions relating to role models were given a wider frame of reference in the later qualitative studies.
It must be appreciated that Studies One and Three of this investigation took place when the subjects were still in school and unlikely to have considered female role-models or mentors to quite the extent an older female might. The qualitative Study Two took place when the girls were three to five years older. They had had more experience of life and were in a better position to seek out approach and recognize the contribution of mentors.

Over the three years of the first study, the sample group did not believe that role models in the media had very much influence in the context of their vocational decision-making. It was not until the qualitative study three years later, that two of the ten young women noted retrospectively the considerable influence role models in the course of their vocational trajectory. It is of interest that neither of these individuals had attributed any importance to role models during Study One. After initially taking up a career to please her father one girl eventually pursued the vocation which interested and fascinated her while still at school “My greatest vocational influence was a soap opera on television featuring a country doctor” (Case Study No. 9).

Some of the role-models nominated by the young women in Study Three as being influential were indeed promoted in the media. Singers, actors, important business women and female politicians were all cited by the girls as role-models. The girls in Study Two also nominated role-models from the media. In the first investigation the data suggested the opposite. The subjects did not believe the media was overtly influential. It could be argued that these young women viewed themselves as being resistant to the effect of the media. The results of the later qualitative studies found that they were not immune to the influence of the media after all.

**Was there a change in the stability of vocational direction over the six years?**

This investigation found that although the high-ability girls in Study Two had made a firm vocational decision by the completion of high school their vocational choices were not stable. When examining the data from Study Two at a micro-level
only one of the ten subjects steadfastly pursued a linear vocational trajectory from an early age.

The occurrence of nine changes or modifications in vocational direction was observed within the triangulated data and can be attributed to various environmental experiences. Self-doubt, father’s influence and/or trying to please him, chance factors, illness, as well as the influence of media role models emerge as factors impacting on a change in vocational direction for these high-ability young women. It would appear that all the factors interact and are a direct result of the environmental issues identified in the work of Tannenbaum (1997), Walberg and Herbig (1991) and Walberg and Zeiser (1997).

Self-doubt has been identified both in the literature and in this investigation as being a key cause of career modification and change. It had various origins and was evident in a variety of ways. The self-doubt registered by the subjects resulted from a lack of confidence in intellectual ability due to negative experiences and/or career efficacy through to the experience of illness in the final years of schooling. Whether self-doubt was a direct result of illness, or the reverse, is arguable: its influence is not.

Identified in this study is the negative influence of some fathers on their daughters’ confidence and resultant vocational change and is regarded as a dimension of self-doubt. The self-doubt experienced by these young women could be attributed firstly to perceived pressure from their fathers or secondly may have been a function of self-imposed pressure in respect of school performance as they struggle with career indecision and the resultant anxiety.

Also impacting on vocational change was a cluster of factors consistent with Tannenbaum’s chance factors were identified as impacting on vocational change, these being a move to another state, a chance meeting with another young woman and being invited to attend a Deakin University program while in Grade 9. It could be argued that illness also is a chance factor.
Multi-potentiality was not overtly identified by the subjects as an issue in their change in career direction. This does not mean it was not present but in a different guise reflective of the Australian school system. Many of the young women in both the quantitative and qualitative studies could be described as achieving in more than one domain. Indeed anecdotal comments did show preferences for more than one career. By the end of high school however they appear to have settled on one course of study. This could be the result of one of several factors unique to Australian society and educational practice. Australian adolescents are expected to select a specific tertiary course of study in Grade 12. The last two years of high school the Victorian Certificate of Education (VCE) are to be regarded as preparation for vocational choice and study options in Grade 11 are generally prerequisites for a university course.

Which variable is perceived by the subjects as being the most important?

“Career…a field in which your interests are displayed”
(Case Study No. 3)

In both the quantitative study as well as the two qualitative studies, the high-ability subjects independently nominated interest and/or inspiration as being an important vocational influencer. The construct of interest was expressed in many different ways however and there were many sources of interest.

Responding to an open-ended question, ‘What else influenced your career choice?’ (DMQ No.24) approximately half of all the young women in the quantitative study and all of the subjects in the qualitative studies nominated “interest in” or “inspirations”. In the qualitative studies the students were again invited to nominate who or what had the most influence on their career choice. When the girls were asked to identify the most important factor impacting on their vocational choice they seemed unable or unwilling to choose just one dimension. Several girls nominated their parents as being the most influential people in their career choice. One girl nominated the media “The life of the country doctor interested and fascinated me”
Three girls specifically mentioned their fathers. This influence was seen as positive as in modelling behaviour or negative as parental pressure.

A principal finding in this study was that interest as a construct was shaped by issues within the highly able young woman’s environment. The various aspects of this environment are reflective of Bronfenbrenner’s (1977) ecological model and represented by the home (parents and relatives), industry (people on the job), the media, friends and parents of friends. The values and attitudes of parents, the atmosphere and policies of their schools, people in the workplace together with friends and to a lesser degree the wider influence of the media all impacted on the development of vocational interest in this investigation.

It would be reasonable to believe therefore that because all the girls mentioned the concept of interest in vocational choice it was a very important issue for them. The role of parents and teachers was often expressed as “developing my interests” (Case Study Nos. 18 and 23) “knowing my skills and developing my interests” (Case Study No. 22).

It would appear to be paradoxical that although vocational interest measured by the VPI was found to be a predictor of final career choice and the construct of interest was designated by the subjects as being vitally important, vocational choice was found to modify and change. The VPI does encompass a wide range of vocational options within a broad interest profile. This, together with other environmental variables such as parents, school, and experiences within the wider community impact on and modify this wide-ranging construct of interest allowing it to take on a less generalized and more specific concept.

**Summary of the discussion.**

When analysing the findings from all three studies the salience of the two environments home and school have been observed as impacting on the high-ability
subjects. This cohort was found to experience and react differently to both of them when compared to the average schoolgirl.

The Coopersmith SEI and the Holland VPI were administered in the first year of the investigation only. The data identified nine areas of significant difference between the high-ability and control groups. These were in the area of Home, Social and Total self-esteem, aspirations, and views of parents and friends compared to the subjects’ own perceptions. Because the data was collected when all of the subjects were still at school it can be viewed as the most definitive.

By the final year of Study One two thirds (n=67) of the subjects were in tertiary education or the work force. From this perspective they observed and made comments on their school experiences. As a result the two areas of significant difference which remained constant, those associated with aspiration and fathers’ interest, appeared to be the strongest variables.

This investigation has found that the actual careers nominated by the sample were the same as their parents in only a few instances. However the general occupational categories identified in the ASCO document demonstrated broadly-based career congruence with those of their parents. Correspondence between high M/F scores and the selection of non-traditional careers was strong in the first two studies. In Study Three however the subjects selected non-traditional vocations irrespective of their M/F score. Such a finding could be seen as a function of school influence as their parents tended to have traditional occupations. The finding that no girl in Study Three selected a particularly high status career could be viewed as a function of either home or school, or both. No Study Three parent had a vocation considered high status and indeed no Study Three subject had a high status score on the VPI. This finding suggests that a dedicated program for high-ability girls does not necessarily produce girls with the highest vocational aspirations.

The CSEI measures personal and social self esteem in the areas of Home, School and the wider community. All these aspects are combined to give a Total score. Social, Home and Total self-esteem was found to be more positive for girls in
the control group than for high-ability girls. The differences in the sub-scales were important and these reflect the subjects’ experience in crucial social contexts. Aspects of the home environment may have caused more negative perceptions of self for the high-ability girls on the basis that the range of options available to them was not always congruent with the expectations of their parents and friends, a finding born out by perceptions evident in DMQ data.

When School self-esteem was observed in Studies One and Two there was no significant difference between the high-ability and average girls. Social self-esteem was significantly lower in the sample cohort however. In Study Three thirteen of the high-ability girls had medium to high self-esteem. This observation is a feature of the investigation and has been discussed in the light of the positive school environment of the Study Three girls and how they saw themselves within their social and school interactions.

High self-esteem was found not to predict high vocational aspirations or the ability to make early career choices. On the basis of the data, the vocational aspirations of the high-ability girls differed from that of the controls. Vocational aspirations within the sample were very high. The prospect of further study and expectations of vocational challenge were an expected part of their understanding about their future careers and intrinsic to the high-ability girls. The measured self-esteem of the intellectually-able girls with lofty vocational aspirations was found to be not strong however. The positive vocational aspiration of these high-ability girls can not be considered as being a consequence of measured self-esteem. It would be reasonable to conclude that high vocation aspirations of the girls were perhaps a product of the equal opportunity policies in many Victorian schools at the time of the investigation. As such, the concept of self-esteem may be depicted as one of efficacy where the ‘do-ability’ aspect of career choice is a feature of the decision-making process. Such a conclusion would appear to support Bronfenbrenner’s (1977) theory relating to the Macrosystem and the significance of the social messaging found within it.
This investigation also observed no strong link between self-esteem and early vocational decision-making. Early decision-making in this context was interpreted as having a firm career option by Grade 10. The subjects were able to make vocational decisions regardless of high or low measured self-esteem.

Within the wider social domain, the variables of mother, father, teachers, friends and role models were examined. The issue of perceived interest, influence, suggestion and views was observed in relation to parents. In the quantitative study mothers were seen as being slightly more important than fathers for the high-ability girls. In the qualitative studies (Two and Three) this perception was to change as the influence of the father, albeit both positive and negative, was revealed as assuming more importance in the vocational trajectory of the high-ability young women.

Although careers teachers were primary vocational advisors for both the high-ability and average young women in all three studies, their continuing vocational influence assumed less importance for the young people as they progressed along the decision-making path. Careers teachers were not seen as being at all influential in vocational decision-making in either Study One or Study Two.

In Study Three teachers appeared to assume more relevance to the vocational decision-making for the high-ability girls however. The Study Three subjects expressed the view that their teachers generally had a positive influence on their career path. The environment within this particular school can be seen as being fundamental to this finding. These subjects were in a school with a dedicated acceleration program for intellectually able girls. It would be reasonable to assume that their career teacher had developed a positive response to, more expertise in, advising able young women of their vocational options. This, and policies promoting equal opportunity and affirmative action within the community in general and this school in particular could be expected to broaden and promote appropriate career options and, in turn, influence vocational choice for the young women. The more modest occupational choice among the Study Three girls however is of interest and needs investigation as to whether it is a function of the home (parental occupations) or of school environment.
The advice and interest of peers was not viewed as important by the high-ability group. The sample group in both the qualitative and quantitative investigations appreciated that although their friends took some interest in their vocational path they had very little influence on career choice. Friends however appeared to exert more influence on the average schoolgirl. This perception did not change over the three years for the high-ability group in Study One. In the qualitative studies although friends were interested and supportive they had limited impact on the vocational decisions of the high-ability young women. It could be anticipated that even though the high-ability subjects respected their friends’ interest in their vocational choices they did not try to influence them.

Media role-models assumed little importance for either group in the quantitative study. In both the qualitative studies however, the highly able girls were happy to identify female-role models as being influential in their lives but not assuming a great deal of sway over vocational decision-making. The media was not identified as being overtly important in the vocational decisions of the young women. It was apparent however that the majority of their role-models appeared in, or were promoted in, the media. The issue of mentors was not viewed as important to the girls. Mentoring is a relatively new concept in Victorian schools. The young women in this investigation were not exposed to mentoring during their school years.

The constancy of vocational choice for the girls over the six years of the study indicates that although most of the highly able girls had made vocational decisions commensurate with their general vocational interest identified by the VPI in order to commence tertiary institutions, these were by no means stable. Triangulation of the data found several commonalities between the qualitative and quantitative studies in the matter of temporal change in career direction. Self-doubt, trying to please father, chance factors including illness, high aspirations, affirmative action in schools and involvement in enrichment programs were common to the high-ability young women who changed vocational direction as well as the one who did not. These factors all contributed to the modification and development of a more specific vocational interest, albeit still within the subject’s broad VPI profile.
The young women in this investigation were unwilling or unable to select just one dimension impacting on vocational choice. The concept of interest however was cited regularly as being an important, if not the most important, influencer of vocational choice. The data suggests that there were various sources of interest and it was shaped by the environmental experiences of the subjects.

Environment was represented within Bronfenbrenner’s (1977) model of the Microsystem, of the immediate environment represented by parents and family, the Mesosystem, linking the school, home and workplace, the Exosystem, encompassing the school atmosphere, people in the work force, the beliefs and values within the wider community and the media together with the Macrosystem which includes a core of general cultural, social and political values not always directly affecting the adolescent. Although it was not always appreciated or recognised by the high-ability girls, experiences within their social and biological environment were different and therefore played a vital role ultimately impacting on vocational choice.
Chapter Eight

Conclusion

The aim of the current study has been to focus attention on, examine and address the variables which influence the vocational decision-making and career choices of highly able adolescent girls in Victoria. The social and educational factors, together with the internal dimensions of self-esteem, aspirations and interest were investigated. Because the study spanned six years, the temporal aspects associated in the vocational decision-making trajectory have been taken into account. These identified dimensions of vocational decision-making have been considered with a view to developing a model of vocational choice.

In this Victorian study the high-ability cohort differentiated from the controls in three major areas. These were in their aspirations, self-esteem and the relative influences of parents, especially the father. Two environment contexts, home and school proved to be salient factors and the findings indicate that the sample and controls experienced them differently.

Most Victorian schools are co-educational settings where gifted students are educated within the mainstream. Independent schools embrace the concept of single-sex education more readily than do government schools although this sector does not offer accelerated learning programs for class cohorts. There are only a very small number of single-sex government schools in Victoria. The school environment of the Study Three subjects was unusual in that it was the only single-sex government school in Victoria which provided a dedicated program for gifted students. Within the single-sex setting characterised in this study two important differences for the girls were identified. Firstly, the articulated program for the gifted girls in Study Three and secondly the somewhat ad hoc provisions in a fragmented/holding environment for the remaining identified gifted subjects in Study Two, who functioned as individuals within mainstream settings, were recognised. The school experiences of subjects
educated in a single-sex school with a cohort of like-minded peers impacted on Home, School and Social self-esteem. These aspects of self-esteem were found to be definitively optimistic compared to that of the subjects who were not educated in a comparable setting. This cohort viewed their teachers also as being more interested and influential in their vocational decision-making than did the subjects in the earlier studies.

Parental influence on interest-formation and thus the vocational choices of their daughters comprised three dimensions. These were firstly, parental occupations secondly, directed influence and thirdly, covert modeling. Although specific vocational choices matched that of the parents in only a few instances career congruence was high. Although the subjects tended to select vocations in the same general category as their parents the lack of clear delineation within the ASCO codes was a difficulty. The Study Three subjects nevertheless tended to chose vocations that reflected the socio-economic demographic of their families. The question must be posed: Was the relatively lower socio-economic status of all but two of the parents in this albeit small cohort an aspect in their daughters’ less ambitions career choices?

In view of the low M/F scores of the Study Three girls, analysis of the home environment, particularly their parents’ occupations, largely in relation to the careers of their mothers, is warranted. The positive and negative interactions expressed through covert or overt influence on their daughter’s vocational decision-making were seen also to have a direct impact on vocational choices.

The initial and final vocational interest of the subjects was found to be reliable in this context and predictive of career choice. It is noted that for high-ability girls, the counselling laboratories of the University of Iowa overseen by Professor Nicholas Colangelo and those of the University of Arizona, Tempe, by Professor Barbara Kerr made use of the VPI in their protocol for helping young people to focus on their futures.

31 All Victorian students are eligible for an interest free government loan to attend university (HECS) which is not repayable until the individual is earning an appropriate salary.
The construct of ‘interest’ was expressed by a majority of the girls in this investigation as being a crucial determinant of their career choices. It was linked to experiences of themselves at home and school and how these contribute to their overall social environment. The question arises: What comprises interest for a high-potential adolescent girl at the end of her education? This inquiry leads to the dilemma of finding a workable understanding of the construct of interest.

Although interest was expressed by a number of the girls as the single most important factor when making a career choice “I would never choose to do something that doesn’t interest me” (anecdotal comment from subject No.27 Study One) and “me, knowing what I want and what I am interested in , knowing what I want from a career. Seeing billboards and thinking I’d like to be a part of that” (Case Study No.24). In terms of the conclusions to be drawn from the findings the sources of articulated interest however were parents, teachers and to a lesser extent media.

The proposed model of vocational choice is informed by the findings of the current study. It is grounded in the theories of Tannenbaum (1983; 1997) and Walberg & Zeiser (1997), and takes as its wider conceptual framework that of Bronfenbrenner (1977; 1986).

Figure 8.1 Proposed model of vocational choice.
There are inherent restrictions in a study which took place at a time when formal identification of the gifted was neither encouraged nor deemed necessary. When interpreting the results of the quantitative study the lack of objective measures of general-ability testing on the control group have to be viewed as a limitation. The lack of discrimination between the various occupational categories in the ASCO document has also meant that professions classified as professional or para-professional are not clear. Despite these limitations this investigation raises a number of issues from which certain recommendations regarding vocational guidance are proposed.

**High-ability girls have special vocational guidance needs.**

- Career teachers must be trained in the vocational needs of gifted girls.
- Career counsellors should not be solely responsible for career education however as schools need to be sensitive to the effect of different classroom settings eg. gifted within the mainstream.
- Schools need to be more proactive in their support of families of gifted girls as they make occupational choices.
- Further investigation into single-sex classes for high-ability girls would be warranted as a result of the findings in regards to measured self-esteem of the girls educated in a single-sex setting.

**High-ability girls experience change in vocational direction over time.**

- Exposure to early vocational counselling from Grade 8, together with support from a career teacher who is trained in the needs of high-ability young women as they progress along their vocational trajectories would provide significant insights into the development of vocational maturity.
- Further investigation of the Study Three cohort to ascertain the stability of vocational choice in this specific population would be of value.

Intellectually-able girls progress through the normal maturational stages of adolescence. However their unique intellectual, social and emotional characteristics
combine to complicate their development. Certainly every intellectually-able girl does not have to be a lawyer but she should be exposed to a breadth of choices and encouraged to be the best that she can be. Career teachers not only should be required to identify interest in their students but proactively encourage gifted young women to “fall in love with an idea” (Kerr 2001).
Appendix A

Letters of Permission
April 3, 1995

This letter is to confirm that Sandra Lea-Wood has permission to carry out surveys in the Department of Education schools in this region toward her studies at the University of Melbourne.

Yours sincerely,

Geoff Chandler
Regional Manager
TO WHOM IT MAY CONCERN

This is to introduce a colleague of mine, Sandra Lea-Wood, who is undertaking doctoral studies at the University of Melbourne.

Her interest is the education of gifted students.

Any assistance you may be able to offer her in this regard would be greatly appreciated.

Yours faithfully

Evelyn Tindale
Deputy Executive Director
IARTV

August
1995
3 Emperor Drive  
Ocean Grove 3226

August 23rd 1995

Dr Ross Millikan  
Carey Grammar School  
Camberwell

Dear Dr Millikan,

Please find enclosed a letter of introduction from Mrs. Evelyn Tindale in reference to my Ph D studies. I would appreciate it if I could make a time to speak to you about my research with a view to including Carey students as part of the population. I will contact you by telephone to arrange a suitable time.

Yours sincerely

Sandra S Lea-Wood  
Manager  
CHIP Centre  
Geelong
Appendix B

Decision-Making Questionnaire (DMQ) #1

Name:------------------------------------------------------------------------------------------------------------------

Address:------------------------------------------------------------------------------------------------------------------

Year Level:------------------------------------------------------------------------------------------------------------------

How would you define career?-----------------------------------------------------------------------------------------------

How would you define a job?-----------------------------------------------------------------------------------------------

What is your mother’s job/career?-----------------------------------------------------------------------------------------------

What is your father’s job/career?-----------------------------------------------------------------------------------------------

Where was your mother born?-----------------------------------------------------------------------------------------------

Where was your father born?-----------------------------------------------------------------------------------------------

1) Have you decided upon a career?-----------------------------------------------------------------------------------------------

2) If so (or not) to whom would you go for advice?-----------------------------------------------------------------------------------------------
Please answer the following questions using the following code from 1-5.

1 having little importance and 5 having the most importance.

3) I will do further study when I leave school.  1-2-3-4-5

4) I expect my career to be stimulating.  1-2-3-4-5

5) I expect my career/job to offer prospects of advancement.  1-2-3-4-5

How much interest has been taken in your career decisions by
6) Your mother?  1-2-3-4-5
7) Your father?  1-2-3-4-5
8) Your teachers?  1-2-3-4-5
9) Your friends?  1-2-3-4-5

How would you rate the level of influence on your career decision-making by
10) Your mother?  1-2-3-4-5
11) Your father?  1-2-3-4-5
12) Your teachers?  1-2-3-4-5
13) Your friends?  1-2-3-4-5

Have there been suggestions of particular career options by
14) Your mother?  1-2-3-4-5
15) Your father?  1-2-3-4-5
16) Your teachers?  1-2-3-4-5
17) Your friends?  1-2-3-4-5

18) How much influence have female role-models in the media had on your career decisions?  1-2-3-4-5

19) What career/job have you decided upon?--------------------------------------

How different is this from the view of
20) Mother?  1-2-3-4-5
21) Father?  1-2-3-4-5
22) Teachers?  1-2-3-4-5
23) Friends?  1-2-3-4-5

24) What or who else has influenced your career decision?-------------------------

25) How?---------------------------------------------------------------------------------------

26) One career I really wouldn’t take up is  ------------------------

27) Why?---------------------------------------------------------------------------------------
Appendix B
Decision-Making Questionnaire (DMQ) #2

Name:------------------------------------------------------------------
Address:------------------------------------------------------------------
Year Level:-----------------------------------------------------------------
How would you define career?---------------------------------------------
How would you define a job?-----------------------------------------------
What is your mother’s job/career?----------------------------------------
What is your father’s job/career?------------------------------------------
Where was your mother born?----------------------------------------------
Where was your father born?----------------------------------------------
1) Have you decided upon a career?--------------------------------------
2) If so (or not) to whom would you go for advice?-----------------------
Please answer the following questions using the following code from 1-5.

1 having little importance and 5 having the most importance.

3) I will do further study when I leave school. 1-2-3-4-5
4) I expect my career to be stimulating. 1-2-3-4-5
5) I expect my career/job to offer prospects of advancement. 1-2-3-4-5

How much interest has been taken in your career decisions by
6) Your mother? 1-2-3-4-5
7) Your father? 1-2-3-4-5
8) Your teachers? 1-2-3-4-5
9) Your friends? 1-2-3-4-5

How would you rate the level of influence on your career decision-making by
10) Your mother? 1-2-3-4-5
11) Your father? 1-2-3-4-5
12) Your teachers? 1-2-3-4-5
13) Your friends? 1-2-3-4-5

Have there been suggestions of particular career options by
14) Your mother? 1-2-3-4-5
15) Your father? 1-2-3-4-5
16) Your teachers? 1-2-3-4-5
17) Your friends? 1-2-3-4-5

18) How much influence have female role-models in the media had on your career decisions? 1-2-3-4-5

Entertainment industry? 1-2-3-4-5
Educators? 1-2-3-4-5
Visitors from industry? 1-2-3-4-5
Famous women? 1-2-3-4-5
Eminent leaders? 1-2-3-4-5

19) What career/job have you decided upon?-------------------------------------------

How different is this from the view of
20) Mother? 1-2-3-4-5
21) Father? 1-2-3-4-5
22) Teachers? 1-2-3-4-5
23) Friends? 1-2-3-4-5

24) What or who do you believe has had the most influence on your career decisions?------------------------------------------
25) Is there a female figure you greatly admire?

26) If yes who is it?

27) What or who else has influenced your career decisions?

25) How?

26) One career I really wouldn’t take up is

27) Why?
Appendix B

Semi-structured interview with students from the first study

1 What is your current profession/career?

2 Do you recall the career you decided upon in the original study?

3 If it is not the same as your original choice why did you change?

4 Who do you believe influenced your decision to change careers?

5 In retrospect who or what most influenced your decision-making?

6 Can you recall the progress of your decision-making?

7 When did you make your final decision?

8 Did the atmosphere in the school contribute to a sense of vocation?

9 Did your school have affirmative action policies?

10 How influential were those policies in influencing your career decision-making?

11 Did you have a role model?

Any other comments that you would like to make?
Appendix B

Vocational Preferences Index
1. Things usually don’t bother me.
2. I find it very hard to talk in front of the class.
3. There are lots of things about myself I’d change if I could.
4. I can make up my mind without too much trouble.
5. I’m a lot of fun to be with.
6. I get upset easily at home.
7. It takes me a long time to get used to anything new.
8. I’m popular with kids my own age.
9. My parents usually consider my feelings.
10. I give in very easily.
11. My parents expect too much of me.
12. It’s pretty tough to be me.
13. Things are all mixed up in my life.
14. Kids usually follow my ideas.
15. I have a low opinion of myself.
16. There are many times when I’d like to leave home.
17. I often feel upset in school.
18. I’m not as nice looking as most people.
19. If I have something to say, I usually say it.
20. My parents understand me.
21. Most people are better liked than I am.
22. I usually feel as if my parents are pushing me.
23. I often get discouraged at school.
24. I often wish I were someone else.
25. I can’t be depended on.
26. I never worry about anything.
27. I’m pretty sure of myself.
28. I’m easy to like.
29. My parents and I have a lot of fun together.

SCHOOLFORM

Coopersmith Inventory

Stanley Coopersmith, Ph.d.
University of California at Davis

Please Print
Name
School
Grade

Directions
On the next pages, you will find a list of statements about feelings. If a statement describes how you usually feel, put an X in the column "Like Me." If the statement does not describe how you usually feel, put an X in the column "Unlike Me." There are no right or wrong answers.

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Appendix C

Case Studies-Study Two

The case studies will be reported following the order in which they were received by the author.

Pre-tertiary influence on vocational decision-making.

Case Study No.1

J has a New Zealand born mother who is a nurse. Her Australian father is a general practitioner. J was identified as highly able in primary (elementary) school and was involved in enrichment programs until year 9. J defined “career” as “something you intend to succeed at and feel satisfied doing”. Her responses to the questions on the DMQ relating to vocational aspiration however were ambivalent. She answered “very important” to the question “I will do further study when I leave school”. J’s responses to the two questions relating to expected stimulation and advancement during her career were unenthusiastic, being considered to be neither “important” or “unimportant”. J believed that her mother took more interest in her vocation decision-making and made more suggestions than her father, teachers or friends. Role models were of “little importance” Even though she nominated her teachers as being the people to whom she would go for advice, her brothers and sisters were the only people J believed influenced her vocational decision-making in any way. This perception was not to change over the three years of study one. In the first year of study one J was undecided on her ultimate vocation, but by the second year of the study Grade 12 for J) she had decided to become a natural scientist. This vocational choice was commensurate with her highest score on the Holland VPI. This score was categorized as Investigative. Because the literature identified self-esteem as being an important dimension of vocational decision-making, it was noted that J had low self esteem as measured by the CSEI. The vocation that J nominated as being the one she was least likely to embrace was “anything medical’ because “I don’t want to be like my parents in a few years”
Case Study No.2

N has an Australian born mother who is a retired teacher currently an artist. Her father, a teacher, was born in Holland. N was identified in primary school as highly able and was involved in enrichment provisions until Grade 8. N defined “career” as “an occupation which you do in order to earn a living and get satisfaction”. Her response to all three questions relating to aspiration were “most important”. N believed her mother took the most interest in her vocational decision-making. Her father and friends did make important suggestions as to career options also. N did not believe however that her parents, teachers or friends influenced her vocational trajectory at all. N had medium to good self-esteem as measured by the CSEI and had made a career decision in the first year of the study. N has decided that Journalism was to be vocational choice. She believed that the variable that influenced her most was interest, “what I really enjoy and am good at”. N’s highest VPI category was Artistic, was commensurate with her vocational choice of Journalism. The career N nominated as one she really would hate was “accounting” as “I hate numbers and any work which doesn’t need imagination”.

Case Study No.3

Both M’s parents were born in England. Her mother, a former nurse, manages a community based project for disabled people. M’s father is a horticulturist. M was identified as highly able when at primary school. During which time she was involved in enrichment activities. In Grade 9 she was selected to take part in a university program for gifted children. M defined career as “a field in which your interests are displayed”. M’s responses to the DMQ questions relating to vocational aspiration were all in the “most important” category. Initially M believed that although both parents and friends took considerable interest in her vocational decision-making she did not believe they had any influence on her choice. M had made a decision in the first year of the study. Her self esteem measured on the CSEI was high. M’s chosen vocation was Sport promotions and management. This vocational choice was commensurate with M’s highest score on the VPI Enterprising. M chose her career
because of her interest in, and enjoyment of, sport and communicating with people in that profession. M noted that although she would seek advice from career teachers and her parents, “interest was the most important importance influence”. She nominated nursing as the career she would be least likely to choose because she had no interest in it. These views did not vary over the next two years of the study. The career that M really did not want to take up was nursing “because I have no interest in it”.

Case Study No.4

F’s Australian mother is a lawyer. Her father, an orthopaedic surgeon was born in England. F was identified as highly able in primary school and was involved in enrichment activities during her primary years. She defined career as “job that you would like to get and that you would work towards”. She responded “most important” to the DMQ questions relating to aspiration. F believed that her father and teachers took “a great deal” of interest in her vocational decisions. Her mother and teachers only “some interest”. F also believed that it was her father and teachers who influenced her most during her vocational trajectory. She also nominated work experience as being important, not only because she was made aware of attractive career options, but she also formed aversions to others. F had decided on a vocation in the first year of the study. She had high self esteem as measured by the CSEI. F’s highest VPI score was categorized as Investigative. She nominated medical science as her vocational choice. This choice was commensurate with F’s highest VPI score. F did not want to become a mechanic because “I like to work with my head not my hands”.

Case Study No.5

R’s father, a general practitioner, was born in Wales. Her mother is an indigenous Australian homemaker. R was identified as highly able in primary school and was involved in enrichment provisions up until Grade 9 when she changed schools. R defined career as “what you decide to do or become”. The questions on the DMQ relating to vocational aspirations were responded to as “most important”
In the first year of the study, R noted that she would seek vocational advice from a careers teacher. She believed that her parents and teachers were interested in her vocational decision-making. R believed however that her parents, teachers, friends and role models had “no influence whatsoever in her decisions regarding career choice. R’s self-esteem, measured by the CSEI, was “medium”. In the first year of the study, R nominated “medicine” as her desired vocation. Teaching was the career she was least likely to pursue. R’s highest score on the VPI was the category of Enterprising. This was not commensurate with her initial choice of medicine. The one career that R would never take up is teaching “because I don’t think I’d like it”.

Case Study No.6

C’s Australian mother is a homemaker. Her father, also Australian born, is a plumber. C was identified as being highly able in primary school and was involved in enrichment provisions until Grade 6. C defined a career as “something that earns a substantial amount of income as well as being something you enjoy”. The questions on the DMQ pertaining to vocational aspiration “I will do further study when I leave school” was considered by C to be “most important”, as was “I expect my career to offer prospects of advancement”. C responded “very important” to the question “I expect my career to be stimulating”. She nominated teachers as being initial advisers. C believed that her mother took “very little” interest in her vocational decision-making and her father, teachers and friends “some”. She believed the influence of her parents was of “little importance”. Her teachers and friends had marginally more influence, “some”. Role models in the media were of no importance at all. C’s self-esteem was measured as “medium” on the CSEI and in the first year of the study she had decided upon a career in the commerce/law field. By the second year of the study however she nominated “finance manager”. This career choice was “very different” from the views of her parents. She believed that the greatest influence on her vocational decision-making was herself and her interests. The career that she nominated that she would be least likely to pursue was teaching because “I just couldn’t handle it”. Her highest RIASEC score was on the Enterprising scale which was commensurate with her vocational choice. Even though she chose a non-
traditional vocation her T-score on the *Masculine/feminine* scale was not high. Teaching was her career aversion because “I couldn’t handle it”.

**Case Study No.7**

T’s Australian mother is a teacher. Her Swedish father is an artist. T was not formally identified as highly able at school. She did however win an academic scholarship to the secondary school where she was invited to attend a university initiated program for gifted students in Grade 9. T defined a career as “an area in which you are working that has a specific interest for you”. She nominated parents, teachers and friends as to whom she would go for advice. She nominated “most important” all questions pertaining to vocational aspiration. T believed that she would become a lawyer or a journalist. She believed that her mother took “a great deal” of interest in her vocational decisions by her father, teachers and friends only “some”. She believed that her parents, teachers and friends had “very little” influence on her vocational trajectory. She nominated “interest” and *Status* as being the most important influencers. T’s highest RIASEC score was *Artistic*. She had medium self-esteem as measured by the CSEI. Her T-score on the *M/F* scale was very low.

Because T specifically mentioned Status as being important in her definition of career it was of interest to observe that she did indeed have a high T-score on the *Status* sub-scale in the VPI. Tiffany wrote that she would “wouldn’t do anything at all like accounting” because it was “boring”.

**Case Study No.8**

A’s mother was born in Germany. She teaches languages in a high school. A’s Australian born father manages a University student hostel. Although A was not formally identified as highly able she was a scholarship winner. A participated in enrichment provision for two years in secondary (junior high) school. . She defined career as “a line of work you make a living from”. She believed further study after school and stimulation in her chosen career to be “most important”. However, A nominated “some” as to whether she expected her career to offer prospects of advancement. A did not believe that her parents, teachers or friends had much interest in her vocational choices. She did believe that her mother and father had only “some”
influence on her vocational decisions. Only her father had made suggestion regarding her choices. She nominated “people in the field” as initial vocational advisors. A had a very high T-score on the M/F scale. Her highest score on the VPI was Investigative. Her self-esteem score was also very high. She nominated “medicine” as a final career choice in the first year of the study. A nominated office worker as something she would never do. “I don’t want to sit at a desk all day long”.

**Case Study No.9**

F has Australian born parents. Her mother is a computer operator and her father a lawyer. F was identified as highly able in primary school and took part in enrichment provisions until Grade 6. She defined career as “the way in which you spend your life after formal education”. In the first year of the study F was undecided about her vocational ambitions. She nominated medicine, law or marketing as possible careers. F noted that she would seek vocational advice from teachers and/or career advisors. The questions on the DMQ relating to career advancement and aspirations were all answered “most important”. F believed that her mother, father and teachers took “a fair amount” of interest in her vocational choices, but the only people who influenced her were her teachers “a fair amount”. She noted that she was also influenced by university open days and people in the professions. F nominated anything not scientific as being the least likely career option saying that she would not do anything scientific because “It is too boring and hard”. F has only medium self-esteem as measured by the CSEI. Her highest RIASEC score was Enterprising. This was commensurate with her final career choice of law.

**Case Study No.10**

K’s Australian mother is an interior decorator. Her father is the owner/director of a large ceramic tiling firm. K was never formally identified as being highly able. However she is included in this study because she was an exceptionally high achiever gaining high scores in all areas of the curriculum. This subject also participated in enrichment provisions while in primary (elementary) school. K defined career as “something you do for a living and for an income”. She nominated teacher, parents,
friends and people on the job, in that order, as to the advisors she would initially seek out. She also nominated work experience and “wanting to help people” as being important influencers. K answered “most important” to all the questions relating to vocational aspiration. K did not believe her parents took very much interest in her career decision-making at all. She believed that her parents, teachers and friends had “very little” influence on her vocational trajectory. K’s highest RIASEC score was in the Enterprising category. Even though her T-score on the M/F scale was very low she nominated a non-traditional career. Her self-esteem score was medium and her final career choice, made in the second year of the study was medicine. K reported that being a secretary was something she wouldn’t wish to be because “it would be boring sitting in an office all day”.

**Three years post study one.**

**Case Study No.1**

When J sat for the Victorian Certificate of Education (VCE) she did not believe that she would obtain the high ranking score necessary to study science at University. She had suffered from Chronic Fatigue Syndrome in Year 10. The illness as well a negative feeling toward her father at the time, she believed accounted for the extremely low self-esteem score on the CSEI. Due to this she lost confidence in her academic ability. She did not attribute her lack of decision-making to poor self esteem however, rather an inability to make up her mind. She joined a mortgage operation with a bank and did data processing. J then applied successfully to the University to commence a Bachelor of Science degree. She obtained good marks and is now completing a post-graduate degree in reproductive science. In retrospect, J believes that her mother influenced her decision to change from natural sciences to reproductive science. J’s mother who works in an IVF clinic took J to work with her during her field work at University where she met many interesting people in the field of reproductive science. This visit fostered as deep interest in the area. Prior to her illness in Grade 10, J believed that her school’s affirmative action policies contributed to her sense of vocation. She had enjoyed the enrichment programs such as philosophy that the school had offered. At that time the school had an atmosphere of
affirmation and “even though I was depressed in Grade 10, there were never any limitations to my career aspiration”. In Grade 11 J attended another school without affirmative action policies.

Case Study No.2

N did not win a place in journalism at the University. She did however complete a degree in social science. It is of interest to note that her nominated career aversion was accounting, but she is currently a customs officer working in data collection. N believes her change in career was not a conscious decision but “it just happened because of the elimination of options”. She has no intention of remaining a customs officer forever. In retrospect, N believes that her initial career choice of journalism was influenced by her parents, especially her mother who went to interviews with her. Her teachers encouraged her writing “because I was good at it” and her interest in journalism because “I really enjoy what I’m good at”. “In terms of career I’ve never wanted to ‘be’ anything. I’m still not sure what I want to ‘be’. I still was to do some writing and further myself creatively, but at the moment I have virtually no career direction”. N believes that she was given little direction in schools and does not remember overt affirmative action policies.

Case Study No.3

M’s initial vocational choice was “Sports promotions and Management. This career was commensurate with her high score on the Holland category Enterprising. Three year later M completed a graduate degree in commerce. She is now completing a Bachelor’s degree in primary and secondary teaching. M believes that her change in vocational was due to her mother, telling her there was a demand for teachers and that teaching was a “wise option” and that she would be more likely to gain employment. M does not imagine that teaching will be long term option for her as she still has ambitions to be to be a management consultant. In retrospect she believes that a Grade 9 involvement in a university commerce program for gifted children fostered her interest in commerce and management. M believed that although her school did support her aspirations through an active equal opportunity policy and promotion of
equal opportunity “there was always the expectation to be the best you could be”. In retrospect M believes her mother, along with her own interests, were the most important influences along her vocational decision-making trajectory.

Case Study No.4

F’s initial career choice was medical science. She is now completing a degree in medicine (MBBS) and intends to become a doctor. F’s appreciated during her first year of study that she found interacting with people far more interesting than research. She attributes her change of preference to a vacation job where she did ward rounds with her father. “My father strongly encouraged me in that area”. “I realized I wanted to work with people healing them like my father”. In retrospect, F believes she always wanted to do “something in medicine” but she did not want to have the late hours her father had. In Grade nine, F attended a university program for gifted children studying forensic science. She enjoyed it but realized she would be dealing with dead bodies so “I went back to medicine and clinical work”. F’s early years of secondary schooling were at a girl’s college. She believed the school fostered a feeling of “girls can do anything” and she was encouraged to “be the best we could be. We were encouraged to take on whatever we wanted”. In her final two years of high school, spent at a co-educational school, she was the only female completing a straight mathematics/science course.

Case Study No.5

Although R’s initial vocational choice was medicine, she is now a trained manager for a large company. In hindsight R believes the career choice of medicine was made only to “please my father”. She commenced study in the area of business tourism at university but changed to science after one year. R then deferred her course and went to Queensland to be with a male friend. “I didn’t enjoy it at all so I quit and went to Queensland”. She applied for, and was accepted for a position in a large stationery company. She enjoyed the work and was invited to undertake management training. Her current position as manager of a large business is commensurate with her high Enterprising score on the VPI. Towards the end of high school, R suffered
from Rheumatic fever. Her grades suffered and “for the first time in my life I had to study” R’s career path was not straight-forward. R noted that she felt that she was guilty of “wasting” her parents’ money. In retrospect R believes that she was trying to please her parents by studying medicine. In the first year of the study, she believed that she was not influenced by her parents at all. She believed that the school had positive policies and that she had enjoyed the enrichment activities offered. Three years after the completion of the first study, R “took responsibility for my own decisions. The greatest influence was myself-I guess”. I became very interested in office management”. R was initially reluctant to do the semi-structured interview. She believed that the other girls in the study would all have “great professional careers”. When assured that other participants also had made vocational changes she was happy to be included in the study.

Case Study No.6

By the second, year of study one C had decided to become a finance manager. She was admitted to university where she gained a Commerce degree. She also completed a Bachelor of Public Policy degree with honours. She is now part of a change management team with a large organization implementing new internal systems. C changed career paths from wanting to work in a finance environment because she disliked the methodical feel that the finance industry had. She wanted something more subjective and interesting to work with. This change in career is cognizant with her highest RIASEC score Enterprising. In retrospect C believes that her major career choice influencers were her peers and successful business women. She likes to read about successful Australian women who have started businesses as well as women in politics. C believes that the atmosphere of her school did encourage her to set high standards. “I think the atmosphere of the school pushed me to achieve high standards, this reflects the positions that my friends are all in, ie. doctors etc…”Her school had equal opportunity policies and fostered self-esteem and promoted successful women. She had also enjoyed the enrichment activities such as Tournament of Minds. Her school friends all had high achieving professional families and so she wanted to attain to the highest academic levels that she could without
taking away from a social life as well. “This also reflects a social level as well, in terms of general knowledge, speech and awareness”.

Case Study No.7

Although T’s final career choice on the questionnaire was law, she had expected to become a journalist all through high school. T was accepted into university to study arts majoring in journalism. She studied policy research and analysis in her third year at university because she believed it was more practical and she put “romantic notions of being a writer into perspective”. In hindsight T believes her first school, a girls’ school, did have affirmative action policies because her final year of schooling was at a co-educational school where “girls were expected to act in a very different way”. T expressed the view that her involvement in a university program for high-ability students promoted confidence in her ability. With hindsight, T believes that “interest” was the most important factor influencing her vocational choice.

Case Study No.8

A is currently studying for a degree in science, majoring in anatomical science. This choice is commensurate with her high VPI interest of Investigative careers. She is taking a psychology minor also because “I’m interested”. She plans to enter the post graduate medical course next year. A believed that although both her parents were very encouraging, in retrospect A believes it was her mother who influenced her career choice considerably. She believes that she did lack confidence in her decisions. She doubted her choices when a teacher told her that she “wasn’t suited to becoming as doctor”. Because A was unsure as to whether medicine was the right choice, she initially undertook a science degree. She studied only the subjects in which she was interested and enjoyed. She still has doubts as to whether she is clever enough. “The main doubt came from myself, (sic) as to whether I was actually smart enough. I suppose I gradually became more confident when my results were fairly consistent and of a fairly high standard”. She believes that in general the school did contribute to a sense of vocation, and the atmosphere of the school as a whole
established a degree of confidence as the school “encouraged us to pursue a university education and professional careers—to be what we can be”. The school did have a philosophy of “empowering young women”. The interest she had in her coursework and the enjoyment of her first year of tertiary study enabled her to feel confident enough to continue in her chosen field although she still has doubts about her intellectual ability.

**Case Study No.9**

F is completing medicine at university. She applied to study science/law because she did not expect to get high enough scores in the Victorian Certificate of Education (year 12) to study medicine. “I was too afraid I wouldn’t get in and I only chose law to please my father”. F contracted glandular fever in year 11 and missed a considerable amount of school. She did well in her first year of science/law and changed to medicine in her second year. In hindsight, F believes “My greatest vocational influence was a soap opera on television featuring a county doctor”. The life of the country doctor interested and fascinated me”. In the original questionnaire in study one however she noted that role models in the media were of “no importance at all”. She later did work experience with two female doctors and looked upon them as role models. F believes that her first secondary school had positive affirmative action policies which encouraged ambition. The girls at her second high school, a co-education college were “less ambitious”.

**Case Study No.10**

K is currently studying speech pathology. Her original choice was “medical practitioner”. In the original survey K answered that her parents had “very little” influence on her career decision-making. However in hindsight, K now admits that the extremely negative influence of her father has caused her career indecision. K believes that his constant questioning “you are going to be a doctor aren’t you?” turned her away from medicine. At the time “He had a huge influence on me and I felt very pressured”. She did not want to set herself up for failure, “because medicine is very hard to get into”, so she chose another career path for herself. “I decided to venture down a path at the opposite end of the spectrum”. “I wanted to become a hot-
shot business woman”. She studied commerce/science. When she found that she wasn’t interested in the course “I didn’t have a passion for this area” she went “career shopping’. “A chance meeting in a pub with a speech pathologist encouraged me to change careers”. K noted that the career surveys held at school always pointed to her undertaking a vocation in the health sciences. Because she believed the surveys to be a farce and as medicine was the pinnacle she ignored them”. I always pushed myself and saw medicine as the pinnacle”. In retrospect K believes she could have saved herself much time and money of she had recognized that she was more suited to the health/sciences. “Had I listened to Ms B, I would have chosen a career in the health sciences when first left school”. “It is so important to empower school children with an abundance of knowledge about what is available to us”. K envisages herself as having a home clinic one day where she can be home for her children. This would complement the high Enterprising score on the VPI. In retrospect “I should have listened to the career advisor after all”.
Appendix C

Case Studies - Study Three

Case Study No.11

M’s mother is a structural engineer, her father an electrical engineer. Both parents were born in Serbia. M defined career as “something which challenges me everyday, something I love and am interested in”. She high aspirations and answered “most important” to all questions on the DMQ relating to further study, stimulation and advancement. She rated the level of interest of her mother as “very important” and her father, “some importance”. Her teachers and friends she perceived as having little or no interest. M nominated people in the job and her mother as her vocational advisors. M believed her mother’s influence was “very important, her father, teachers and friends were not at all important. M stated that her father and teachers had made vocational suggestions. She nominated role models from industry and famous women and being “very important” Eminent leaders were “most important”. She nominated several females she admired, “very high role business women who are in charge of giant corporations”. Her career choice, of civil engineer, was not at all different to that of her mother. When asked to nominate who or what had the most influence on her career decision-making, M nominated “women with important roles really interest and inspire me”. M noted that her European background enabled her to see old structures and buildings and ever since she has wanted to design and build structures. She believes “that meeting professionals and seeing the power and respect they get for working so hard” influenced her. M had a high self-esteem score. Her highest VPI (interest) category was Realistic.
Case Study No.12

E’s mother is Australian and her father English. Both parents are musicians and E wishes to be a musician or “something in the music industry” also. E defined career as “a job in the industry you are interested in”. She did not believe that study after school or advancement was at all important. However she answered “most important” to whether she expected her career to be stimulating. E said that she would seek vocational advice from friends in the music industry. E believed that her mother and father interest in her vocational choice was “most important”. Her friends “very important” She did not believe her teachers were at all interested. She rated her father’s influence as being “most important”. Her mother, teachers and friends had “some” or “very little” impact however. E did not believe that female role models were important at all. E believes her interest in, and love of performing had the most influence on her vocational choice. She believes the opportunities she received through her involvement in the media gave her inspiration. Es self-esteem score was medium and her highest VPI interest category was Artistic.

Case Study No.13

B’s mother is an Australian research consultant. Her father is a university lecturer. B defined career as “the path you chose for employment”. B has high aspirations. She answered ‘most important” to all questions relating to aspiration on the DMT. She believed her mother and father took “a great deal” of interest in her vocational decision-making. Her teachers and friends were less interested. B rated “some” influence for her parents and teachers. Her friends had no influence at all. Role models were of importance to B. She nominated eminent leaders as being “most important’, educators, people from industry and famous women as “very important” role models. She is studying political science so she can “change the world”. B believes that her social studies teacher had the greatest influence over her vocational choice “because she got me interested”. She then added “probably my mum, she supported me in what I’m interested in”. B has very high self-esteem. Her highest VPI interest category was Realistic.
Case Study No.14

N’s Australian parents are managing directors. She defined career as “a long term thing – a number of jobs in the one area”. She is studying computer science. She nominated her parents and teachers as the people to whom she would go for advice. She believed her mother’s interest in her vocational decisions was “very important” her father ‘most important’. The interest of teachers and friends was of “very little importance”. She believes that her parents and friends had “a fair amount “of influence on her vocational decision-making. She believed her role models were famous women. The Olympic skier, Zaly Stegal, was the one woman she greatly admired. N noted that her father, (“my dad wants me to go into an important, well paid profession”) had the most influence on her career. She believed work experience helped her make a career decision. Ns self-esteem was medium. Her highest VPI interest category was *investigative*. Her vocational aspirations were strong.

Case Study No.15

C’s mother is a psychologist. Her father is a chaplain and computer programmer. She defined career as “something you do because it interests you”. S stated that she would seek advice from “the universities that offer the course that you are interested in”. She believed that further study after school and a stimulating career was “most important”. Prospects of advancement was “very important” to C. She rated the level of interest of her mother, father, teachers and friends as “very little”. The level of influence of her parents was “some’ her teachers and friends “very little”. Her mothers vocational suggestions were “very important” her father and friends “some” and teachers “very little”. Role models held “very little” importance for C and she did not have a female figure she greatly admired. C believes that she had the most influence over her vocational decisions. “Me because I love to draw and design-I don’t care what others want or expect me to do”. She is studying graphic design. C believes that her mother’s encouragement “a little” helped. C has very high self-esteem. Her highest VPI interest score was *Artistic*. 
Case Study No.16

W’s parents are Hong Kong Chinese. Her mother is a housewife and her father a university lecturer. W defined career as “career is a broader sense of a job more like a whole general occupation”. W believed that further study, expectations of stimulation and advancement were “very important”. W would seek vocational advice from her parents and her teachers. She believed that her mother and father and friends took “a great deal” of interest in her vocational decision-making. Her teachers “some” interest. W believed that both her mother and her father influenced her vocational choice “a great deal”. Her friends and teachers had only “some” influence. W nominated role models in the entertainment industry as being “most important”. She believed that famous women and eminent leaders were “very important”. After herself, she nominated her mother, father and sister as having the most influence on her vocational path. W nominated computer scientist as her preferred occupation. W’s self-esteem was high. Her highest VPI interest category was Investigative.

Case Study No.17

R’s parents are English. Her mother is a librarian and her father a scientist. She defined career as “what you do with your life”. She believed further study, stimulation and prospects of advancement were “most important”. She rated the level of interest of her parents, teachers and friends as “very little”. She nominated her agent as the person to whom she would seek advice. She rated the level of influence of the variables as “very little”. She believed that her career choice was “very different’ from the expectations of her teachers and friends. Role models were of “very little” importance except for visitors from industry who were of “some’ importance. She had decided upon a career in media production. R believed that her own interest was fostered through the editing facilities at school. She believed that her involvement with the screen-actors studio in her regional city contributed to her interest. R had low self esteem. R had a very flat, low interest VPI profile. No category could be measured as being high. It would be expected that her self-control score would be high also, however it was very low.
**Case Study No.18**

M’s mother, a teacher was born in Malaysia. Her father is an Australian born farmer and stock agent. M defined career as ‘the thing that you’ve worked hard at getting. Something that interests you and you want to do”. M believe that further study, vocational stimulation and advancement were “most important”. She nominated her god mother as the person to whom she would go for vocational advice. She believed her Godmother and her mother had the most influence on her career decisions. M rated the level of interest of her mother as “very important”. Her father, teachers and friends had no interest in her career choices. M rated her mother’s level of influence “most important”. The other three variables had “very little” influence on her vocational path. Her mother’s career suggestions were the only ones of any importance at all. They were “very important”. M nominated role models comprising famous women and eminent leaders as of “some” importance. Her self-esteem was medium. M highest VPI interest category was *Investigative*. M wishes to study human biology.

**Case Study No.19**

Cs mother is a nurse and her father a clerk. She nominated career as “a pathway after school”. Her answers to the questions relating to aspiration were somewhat ambiguous. She believed that study after school was of “some’ importance and a stimulating career of “little” importance. Her expectations of advancement were “very important” however. C responded “no-one’ when asked to whom she would seek advice. She believed that her own interests had had the most influence on her vocational choice. She believed her mother was “very interested” in her vocational decisions. Her friends had “some” degree of interest but her father and teachers “very little”. The influence of each the variables appeared to be of similar significance. She did not believe role models were of any importance. She did, however nominate an actor, Kylie Minogues, as a female figure that she admired. C self-esteem was high. Her highest VPI interest category was *Enterprising*. C is planning a career in advertising and is studying sales and marketing.
Case Study No.20

K’s mother is a secretary, her father a physics teacher. K defined career as “the pathway to which your job belongs”. She believed further study, a stimulating career and further advancement to be “most important. Her advisors would be the Royal Australian Air Force (RAAF) because she wanted to be an intelligence officer. K believes her mother and father took “a great deal” of interest in her vocational choice. K did not believe any of the variables influenced her vocational choice. Her mother and father’s career suggestions were ‘most important” however. She believes her interest in the military had the greatest influence on her vocational choice. K did not believe female role models had any influence on her career choice. She did greatly admire Marie Curie because ‘radiation is a wonderful thing’. K has very high self-esteem. Her highest VPI interest category was Enterprising.

Case Study No.21

H did not nominate an occupation for either of her parents. She defined career as “a way to earn a living doing something you are interested in and enjoy”. She believed that career further study, stimulation and career advancement were “most important”. She nominated her teachers and her parents as the advisors of choice. H believed that her mother and her teachers took “a great deal” of interest in her career decisions. The level of influence of her parents and friends was minimal. She believed that her teachers had a “very important” level of influence. H did not have a specific female role model. K nominated “some” influence for role models from education. K believed that her teachers had the most influence on her vocational decisions. “I think it is my teachers who have influenced me. They’re the only ones who know what I’m good at”. H is studying astronomy. She had medium self-esteem. Her highest VPI interest category was Investigative.
Case Study No.22

Ts mother is a motor sports manager. Her English born father is a scientist with the Australian Animal Health Laboratory. She defined career as “an area of work with different paths and possibilities”. T believed that further study, stimulation and advancement in her career were “very important”. She nominated teachers and “people with skills in the area” as to whom she would seek advice. She rated the level of interest of her father as ‘most important’ and her teachers “very important”, her friends “some’ but her mother “very little’. T believed that the influence of her father and teachers was “very” important, her friends “some” her father “very little’. T believed that although she did not have a female she greatly admired, role models in education or eminent women were of ‘some” importance. T noted that although she thought that her teachers had the most influence because ‘they all recommend different areas” She viewed her own skills as being important. “I would like to take up a career that matches what I am capable of”. T self-esteem was medium. Her highest VPI interest score was Investigative. T’s career ambition is to become a librarian.

Case Study No.23

C’s mother is a manager. She did not nominate an occupation for her father. She defined career as “what you do to earn money”. She nominated her teachers as the vocational advisors of choice. Further study, stimulation and advancement were all “most important”. The rate of interest taken by her teachers and friends in her career decisions was “very important”. C also rated her teachers’ influence as being “most important” and her friends “very important”. Although C answered “no” to the questions asking her if she had a female figure she admired, she said that role models in entertainment and education were “most important”. C wants to be a musician. Her highest VPI interest category was Artistic. C had medium self-esteem.
Case Study No.24

C’s mother is a music administrator, her father an architect. She defined career as “work placement which encourages you to work your way to the top”. C believed that further study, job stimulation and advancement were “most important”. Her career advisor would be her father. She believed that the level of interest in her decision-making by her mother and father was “most important”. Her friends interest “very important” but her teachers “very little”. C rated her father as having the greatest level of influence on her vocational path “very important”, her friends and her mother had ‘some” influence. C believed that role models in the form of famous women and eminent leaders were “very important”. The female figure she greatly admired were her mother and a family friend. C is studying marketing and she wants to do “something in the advertising industry”. She believes the greatest influence on her vocational choice was herself. “Me, knowing what I’m interested in, and what I want from a career. Seeing billboards and thinking I’d like to be a part of that. I like the idea of power dressing”. C had very high self-esteem and her highest VPI interest category was Enterprising.
Appendix D

Study Matrices

Study Two

(1) Triangulation matrix

(2) Parent and daughter career continuity

Study Three

(3) Diagrammatic representation of vocational influence
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<th>Aspirations</th>
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<th>Mother sugg.</th>
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## Parent daughter career continuity

### Study Two

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<td>reproductive scientist (mm)** s/d</td>
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<td>accountant</td>
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<td>sports management (mm)</td>
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<td>doctor</td>
<td>manager-now commercial law ** s/d</td>
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<td>lawyer</td>
<td>law then medicine** s/d</td>
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<tr>
<td>10</td>
<td>interior decorator</td>
<td>owner/managing director</td>
<td>speech pathologist **</td>
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(m) modelling
** trying to please father
s/d self doubt
Diagrammatic representation of vocational influence.

Study Three

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<td>Home self-esteem</td>
<td>x x x x x x x x x x</td>
</tr>
<tr>
<td>School self-esteem</td>
<td>x x x x x x x x x x</td>
</tr>
<tr>
<td>Total self-esteem</td>
<td>x x x x x x x x x x</td>
</tr>
<tr>
<td>VPI profile match</td>
<td>x x x x x x x x x x</td>
</tr>
</tbody>
</table>

An x represents the presence of the variable of influence.
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