THE RELATIONSHIP BETWEEN IMAGES OF NURSING AND PERSON-ENVIRONMENT FIT

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ABSTRACT

The public image of nurses has been of great concern to the nursing profession. This image views nursing as a female occupation with nurses having little power over their practice. Researchers claim that the stereotypical public image of nursing could constrain nursing practice. For instance, nursing skills may be underutilised and the health care environment may not adequately reward nurses for their performance. There has also been a concern that the constraints arising from the stereotypical public image of nursing may adversely affect nurses’ work behaviour. Based on the Person-Environment-Occupation Model of Occupational Performance, the thesis examined how the public image of nurses could impact on nursing practice. The thesis also explored the person-environment (mis)fit in nursing, which is characterised as (in)congruence between nurses’ professional orientation (i.e., nurses’ self-image, role expectations and work values) and their actual practice (i.e., nurses’ perception of the image of nurses held by the public, and nurses’ perceptions of their actual roles and the rewards available to them in practice). In addition, the thesis investigated the factors that could moderate nurses’ perception of the person-environment fit, and how this fit could impact on their job performance and turnover intention.

Currently practising Division One and Three nurses from one university and two hospitals ($N = 346$) in Victoria, Australia participated in the study by completing a questionnaire. Data were analysed using a series of regression analyses. In addition, six participants from the survey sample were recruited for a focus group, in which the survey results were discussed.

The results showed that nurses perceived that the public viewed them more negatively than they saw themselves as professionals. The results also showed that the public image of nurses could be manifested within the health care environment in the form of a lack of professional recognition toward nurses. In other words, the lack of public understanding of nursing contributes to the person-environment misfit. Nurses’ perception of the person-environment misfit was, however, partially moderated by the level of their collective self-esteem and their area of practice.

The impact of the person-environment misfit on nurses’ job performance and their intention to leave their jobs was complex. With regard to job performance, it was
nurses’ professional orientation that guided their performance. Positive environmental characteristics also contributed to nurses’ job performance. However, when nurses perceived a lack of recognition, their professional orientation motivated them to demonstrate better performance to change the environment in a way that would correspond to their professional needs. While a lack of professional recognition stimulated nurses’ job performance, it had a greater impact on their turnover intention. When nurses perceived their public image to be poor in addition to a lack of professional recognition at work, their intention to leave their jobs tended to increase.

Based on the results, three strategies to improve nurses’ job performance and nursing retention are recommended. These strategies include improving the public image of nursing, encouraging professional socialisation in nursing, and improving the characteristics of the health care environment.
STUDENT DECLARATION

This is to clarify that:

(i) this thesis comprises only my original work toward the PhD except where indicated.

(ii) due acknowledgement has been made in the text to all other material used.

(iii) the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Signature of candidate ..........................  Date .............................
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CHAPTER 1: INTRODUCTION

Nurses live in a complex world. Within the professional milieu, nurses are exposed to a professional culture wherein they internalise their professional self-image, and are encouraged to value and engage in professional autonomous practice. Within society, nursing is often still viewed as a woman’s occupation, which involves a subordinate role to physicians and a lack of autonomous practice (Hemsley-Brown & Foskett, 1999; Rossiter, Bidewell, Chon, 1998; Tang et al., 1998, 1999). According to the function of the stereotype (Ashmore & Del Boca, 1981; Snyder, 1981), these traditional and stereotyped public images of nursing may influence the public’s expectations and treatments toward nurses in ways that constrain nurses to traditional subordinate forms of practice in the health care environment. Thus, differing expectations held by society and the nursing profession may create a situation called person-environment misfit, which refers to a disharmonious relationship between employees’ professional orientation/needs and what the environment provides to reinforce their orientation/needs (Mitchell, Holtom, Lee & Erez, 2001). In other words, the health care environment, reflecting the traditional public image of nurses, may no longer provide nurses with enough decision-making opportunities and caring roles that nurses assume to be their responsibility. Furthermore, professional values such as autonomy and recognition that nurses assume to receive, based on their professional aptitudes, may not be evident.

A number of studies have examined the public image of nurses and the characteristics of the health care environment. These studies have found that the public tends to hold traditional images of nursing. Moreover, the studies have shown that the roles of nursing as a profession have been subordinated in the health care environment. However, there is a paucity of studies that have explored how these different images and expectations from society and the domain of nursing affect the health care environment and occupational behaviour of nurses through nurses’ perceptions.

This thesis aimed to uncover the effects of these incompatible views toward nurses on their practice using quantitative and qualitative approaches.
Background of the Study

The Public Image of Nurses and Nursing Stereotyping

Nurses have been long concerned with images of nursing. Image is a mental representation of objects or events (The Free Dictionary, 2003). Yet, image is very much evident in our lives, as it influences our interaction with and expectation toward others, and conveys messages as to how we see them (Snyder, 1981). For instance, medicine has held such images as masculinity, dominance and intelligence, and these images communicate the reputation of medical professionals and influence the public’s interaction with and expectations toward them. All the professions are subject to images that the public holds toward them (Cunningham, 1999). This is why nurses need to be so concerned about their public image.

Nursing literature in Western countries suggests that the public image of nurses is more or less stereotyped and communicates negative images of nurses. Society is found to respect the traditional nursing role of caring, which involves helping others and a lot of hands-on work (Hemsley-Brown & Foskett, 1999; Powers, 2001) and to understand that becoming a nurse requires a university degree (Tang et al., 1999). However, traditional images such as nurses being subservient to medical professionals still exist due to the nursing stereotyping. A stereotype refers to “a cognitive framework whereby characteristics are attributed to an entire group of people” (Cunningham, 1999, p. 46) and forms “a set of well-learned, widely shared, immediately evoked, and socially validated beliefs about a social group” (Lott & Saxon, 2002, p. 482). This cognitive framework functions to create a shortcut or simplistic classification system of targets in a human brain/mind. This shortcut system is to make better use of a human’s limited capacity to process a large volume of information in daily life (Macrae, Milne & Bodenhausen, 1994). Nursing stereotypes are products of this shortcut or simplistic classification system in a human’s cognitive framework. Rather than examining each individual nurse’s characteristics, people tend to classify nurses into a group of people who possess virtue and modesty, and act like angels and doctors’ handmaidens. This saves time and energy for information processing and leaves individuals with more energy that can be directed to other information.
Many factors help to form society’s stereotyping of nursing. One of these is sex role stereotyping. Although many men have entered the nursing profession, the majority of nurses are women. Taylor (1981) states that group stereotypes may be attributable to a group sex composition. Thus, the images of nurses are often associated with female stereotypes of powerlessness and subservience, and could communicate a non-professional image (Buscherhof & Seymour, 1990; Hallam, 1998; Kaler, Levey & Schall, 1989; Kalisch & Kalisch, 1987; Sheer, 1994).

One other factor contributing to the negative images of nurses stems from nursing history and its role. Early nurses evolved from religious orders, which placed nurses in a subservient position to male priests and physicians, and attributed to their public image as ministering angels in Western countries (Colliere, 1986). Moreover, many of the early nurses came from a low socio-economic class up until the late 19th century (Bridges, 1990). These factors contributed to constraining nurses to be identified as the handmaidens of physicians who came from an upper social class (Giampietro & Schlton-Elwell, 1990; Porter, 1991). In Australia, the development of nursing mirrored that of other Western countries. Nursing profession began to take shape in 1838, when five Irish Sisters of Charity arrived in New South Wales to provide professional nursing care and training. Within a church hierarchy, however, their practice was governed by a male bishop and the sisters struggled to gain autonomy over their practice (Nelson, 2001). Nurses were also recruited from domestic staff and former patients, who were from a “dissolute class” during the colonisation (Russell, 1990, p. 7). In addition, the introduction of Nightingalism in 1868 (Russell, 2000), which put emphasis on femininity and defined nurses as physicians’ handmaidens (Colliere, 1986; Muff, 1982; Giampietro & Schlton-Elwell, 1990), contributed to nurses’ occupying a subordinate position. This historical background is still deeply rooted in many societal attitudes toward nurses, and influences the public image of nurses. As a result, society tends to attach less significance to the nurses’ role of care, as opposed to the physician’s role of cure (Giampietro & Shelton-Elwell, 1990).

Moreover, the media plays an influential role in reinforcing negative image of nurses. Images of nurses as being subservient, powerless, unaffectionate, selflessness, unintelligent (Bridges, 1990; Cheek, 1995; Greenwood, 1999), and as a romantic partner of a physician (Darbyshire, 2000; Delacour, 1991; DeVries, Dunlop, Goopy, Moyle & Sutherland-Lockhart, 1995; Holmes, 1997) are often projected by
the media. In fact, nurse characters rarely display any independence in television series depicting medical scenes (Hallam, 2000). Forrester (2000) argues that images and narratives projected by television serve as a framework for us to perceive, interpret and organise our real world. Thus, images of nurses portrayed by the media help to form the overall stereotyping of nursing.

In addition, the difference in educational background between physicians and nurses impacts on the nurses’ image. Compared to medicine to which its entry requires a high academic performance and 6 years of education, a path to nursing is more widely open and the educational preparation takes only half the duration of that of medicine. Christman (1998) argues that a poor educational preparation in nursing induces a negative public image of nurses. The educational difference between nurses and doctors also produces a hierarchical structure wherein nurses are placed under the supervision of physicians as members of a high status group. Kenway and Watkins (1994) articulate that medicine’s successful exploitation of their educational credentials as an academic gate-keeping mechanism to limit the number of physicians has led to enhancement of its social status and values in contrast with nursing.

Finally, the appearance of nurses and how they behave reinforce the stereotypical image of nurses. Uniform, language, and behaviour all serve as symbols to communicate one’s social status in the society. Campbell-Heider and Hart (1993) claim that nurses’ subordinate social status is manifested in the way in which nurses address themselves with first names while they respond to physicians with title (Dr. MD) and to patients with correct societal address. Nurses addressing themselves by first name also make them less identifiable to patients and the public. Thus, it leads to poor public understanding of nursing’s contribution to the health care (Gordon, 2004). Moreover, Savage (1987) asserts that nursing uniforms make nurses less individualistic, and turn them into sexual objects. For instance, physically attractive nurses are often illustrated in such media as greeting cards and motion pictures, which make them appear less professional. Other scholars also expressed concern as to the effect of nursing uniforms, which manifest traditional images of nurses such as sacrificing angels and doctors’ handmaidens, therefore encouraging the nursing stereotypes (Alford et al., 1995; Pearson, Baker, Walsh & Fitzgerald, 2001).

Negative nursing stereotyping has been reported by nursing scholars in many countries (Powers, 2001). These public images of nursing are conveyed to nurses in the form of social expectations. The images also influence the public’s interaction
with nurses. Snyder (1981) argues “when individuals use their stereotyped beliefs as guides for regulating their interactions with others, they may constrain the others’ behavioural options in ways that produce actual behavioural confirmation for these stereotyped beliefs of the target” (p. 193). Hence, the stereotypical public image of nursing is believed to have oppressed nursing practice by influencing the decisions of policymakers pertaining to the allocation of scarce resources (Kalisch & Kalisch, 1987), roles of nursing (Hughes, as cited in Cunningham, 1999), and doctor-nurse relationships (Corser, 2000). Nurses have complained about inadequate remuneration, a lack of managerial support, and insufficient facilities/equipment and resources because of limited understandings and values obtained from the public regarding their roles, and low professional recognition from hospital managers (Jones & Cheek, 2003; Nurse Recruitment and Retention Committee, 2001; National Review of Nursing Education, 2002). Nurses have also reported a lack of opportunities to utilise their skills and in making decisions (O’Donnell, 1996), because physicians are continuously seen to have power for decision-making and to determine when to use nursing knowledge (Manias & Street, 2001; Wicks, 1999). Brooker and Eakin (2001) argue that deprivation of autonomy and skills are strategies often used by those with power (usually men) to control lower class groups (usually women). Therefore, the public image of nursing and their tendencies to sanction medical authority, whilst seeing nurses as doctors’ assistants, result in perpetuating a dichotomous relationship between physicians and nurses, hence, reinforcing the negative images of nurses.

Nursing stereotyping and an oppressive health care environment are recurring themes in the nursing literature. This is because people have a tendency to preserve their mental framework, which verifies and falsifies new information in a way that corresponds to old knowledge through socially motivated processes (Fiedler & Bless, 2001; Hilton & Von Hippel, 1996). Thus, this has been causing “a slow painful change” (Poulton, as audio-recorded in Bird & Waterkeyn, 1997) for nurses to improve both the nursing stereotyping and their environment.

Nursing’s Advancement toward Professionalisation

In contrast to the public tendency to preserve stereotyped beliefs toward nursing and the status quo as to its subordinate position, nursing has made enormous changes toward professionalisation (Keogh, 1997). Professionalisation refers to the process by which occupations and members modify their characteristics to achieve
professional status (Styles, 1982). Nursing has strived to achieve professional status by increasing the body of nursing knowledge and by enhancing nursing practice. For instance, American nurses’ remarkable challenges led to the foundation of academic programs at a university level in 1909, which enabled nurses to conduct nursing research as well as to establish an emerging theoretical base. Since the 1960s, nursing has welcomed the development of various nursing theories, which have progressively shifted nursing practice from task orientation to patient orientation. On top of that, the code of ethics was completed in 1950 to strengthen nursing morale (Kelly & Joel, 1996; Wilensky, as cited in Moloney, 1992). Nursing roles have been expanding in the various fields such as management and research, and at diverse levels including the advent of clinical nurse specialists and advanced nurse practitioners.

Nurses’ challenges have also been extended to the public image of nurses. Various American professional associations have engaged in surveillance of the media projection of nurses (Kalisch & Kalisch, 1983; Kelly & Joel, 1996). British nurses have also appraised the media images of nurses through the nursing journal “Nursing Times” (Kalisch & Kalisch, 1983; Gaze, 1991).

Australian nurses’ search for professionalisation of nursing is well documented by Russell (1990, 2000) and McCoppin and Gardner (1994). The establishment of nursing associations such as the Australian Trained Nurses’ Association in New South Wales in 1899 and the Victorian Trained Nurses’ Association in 1901 united Australian nurses with a strong bond. They also played a leading role in establishing statutory authorities for registration in the 1920s and in standardising and improving nursing education and practice (Russell, 2000). As a result, nursing clinical structures/professional pathways were established and roles of nurses at various levels were defined.

Another significant step in Australian nursing was the transfer of nursing education from the hospital to the university sector. Prior to this transfer, nursing education was conducted in hospitals and a small number of universities, which provided 3-year diploma courses, leading to separate registration as Division 1 (general nursing) or Division 3 (mental health nursing) nurses. New South Wales was the first state to enact the transfer of all basic nursing programmes to the university sector in 1985. With enormous support from nursing organisations including The Australian Nursing Federation and Royal College of Nursing, Australia, the
Commonwealth Government subsequently announced a nation-wide full transfer of nursing education to universities, which was completed in 1993 (Russell, 2000). The transfer of nursing education to the tertiary sector elevated entry requirements to the profession at the Bachelor level. All newly registered nurses were placed in Division 1 (comprehensive level) after education was transferred to the university sector. For nurses who had completed a 3-year diploma course, a Bachelor of Nursing (post registration) course was established to convert diplomas to degrees. Education for Division 2 (enrolled) nurses, who perform a limited range of tasks under the supervision of Division 1 or Division 3 nurses, remains with registered training organisations that provide a 1-year certificate course (e.g., Division 2 nurses cannot administer medication, unless they complete an accredited medication course). However, they are later able to undertake a 2-year Bachelor of Nursing course to register as Division 1 nurses. The transfer of nursing education to universities has also opened up more opportunities for post-graduate education. More and more Australian nurses are graduating from universities and completing postgraduate degree courses. Nurses now have the research skills and are better equipped to contribute to the body of nursing knowledge. Postgraduate education has also prepared nurses for leadership roles, to engage in decision-making and/or manage fiscal and human resources more effectively.

Just as in the USA and the UK, Australian nursing has also changed rapidly over the past 40 years. In 1992, the Australian Nursing Council, Inc. (ANCI) was established with a national focus to regulate Australian nurses. Since then, ANCI has endeavoured to promote nursing practice and education by the release of a Nursing Code of Ethics in 1993, the Code of Professional Conduct in 1995, and the Guidelines for the Accreditation of Nursing Courses in 1996 (Australian Nursing Council, Inc, 2000). The establishment of the competency standards by ANCI has also guided nursing education and practice. A recent development in nursing practice has been the introduction of advanced nursing practitioners in New South Wales and more recently in Victoria (Department of Human Services, 2000).

These changes have exposed nurses to a professional culture (du Toit, 1995). Having socialised in such a culture through formal education and professional practice, nurses develop a professional self-concept, which can be transformed to role conception (i.e., their desires/expectations of what they should do as professionals)
and values (i.e., their desires/expectations of what they should receive in exchange for their contribution to health care). In fact, recent Australian research has revealed that nurses are more likely to view themselves as professional, intelligent, leaders and caring (Cowin, 2001; Takase, 2000).

The Consequences of the Different Images of Nursing

The literature suggests that society still holds a stereotypical image of nurses to some extent, while nurses have been socialised in a professional culture and have developed a professional self-concept. These different images of nursing held by society and nurses are assumed to have created incompatible expectations toward nursing. Whereas the public has been inclined to perpetuate an image of the nursing role to be subordinate to other health professionals, nurses have been encouraged to seek autonomous professional practice by the nursing profession. In other words, the health care environment, reflecting the public opinions toward nursing, may no longer fit nurses’ expectations and preferences of their images, roles and values. This may create the person-environment misfit in nursing, and psychologists argue that the misfit impairs employees’ occupational behaviour (Dawis & Lofquist, 1984; Law et al., 1996; Walsh & Holland, 1992). The degree of misfit and its adverse effect on nurses’ occupational behaviour would be greater as nurses progressively enhance their professional images through professionalisation, while the public image of nurses went through little improvement.

Despite nurses’ strong concern about the impact of public stereotypes on nursing practice, few studies have investigated how the public images affect nursing roles and environment, and how the current health care environment is congruent with nurses’ expectations, from the nurses’ viewpoint. Past studies tended to focus only on descriptions of the public images of nursing (Tang et al., 1999), or nurses’ perception of the public images of them (Krebs et al., 1996). Another study expanded the influence of the public stereotypes on the doctor-nurse relationship (Corser, 2000). Nonetheless, power relationships between doctors and nurses is only one dimension of the impact of the public stereotypes, and studies on other dimensions such as their impact on the health care reward system (e.g., pay, degree of autonomy and respect provided to nurses by the environment) have been largely neglected.
In addition, impact of the misfit on nurses’ occupational behaviour, including nurses’ job performance and their intention to continue or to quit their job, have received little attention in nursing studies. It is not surprising, considering that a paucity of studies have been conducted to examine an effect of the person-environment fit in nursing. Nursing studies tend to emphasise environmental factors as determinants of nurses’ occupational behaviour (Beaulieu, Shamian, Donner & Pringle, 1997; Laschinger & Havens, 1996), but neglect to look at how much nurses’ professional orientation/needs are met by their environment. Psychologists (Dawis & Lofquist, 1984; Walsh & Holland, 1992) have argued that individuals’ personal orientation including personality, skills and values have to be matched with environmental characteristics in order to increase job satisfaction and work motivation, and to reduce employees’ intention to leave their jobs (i.e., turnover intention). In other words, it is a harmonious relationship between a person and their environment, but not personal or environmental factors alone, that influences an individuals’ occupational behaviour. This relationship implies that previous nursing studies that have investigated only the impact of environmental factors provide partial explanation of nurses’ occupational behaviour.

Research Purposes and Questions

The purpose of this thesis was, therefore, to explore how different images of nursing held by society and nurses might create the person-environment misfit in nursing roles and values in the health care environment. The thesis also aimed to identify the outcomes of the misfit in nurses’ job performance and turnover intention. In addition, the present thesis explored how individual characteristics of nurses could moderate their perception of the person-environment relationship. The research questions asked were;

1. How did the nurses’ self-concept compare with nurses’ perception of their public image?
2. How did nurses’ self-concept and perceived public image contribute to their perceptions of ideal and actual nursing practice in terms of their roles and values?
3. Which individual characteristics of nurses could moderate nurses’ perceptions of the fit between their self-concept and the perceived public image and which could moderate the fit between the ideal and actual nursing practice?
4. How did the fit in nursing image, roles and values contribute to nurses’ job performance and turnover intention?

Significance of the Thesis

This thesis is significant as it provides more accurate pictures of the antecedents of nurses’ occupational behaviour by investigating the impact of both nurses’ professional needs and their perception of the health care environment, and the impact of the relationship between them. Moreover, by investigating how the image of nurses could affect various dimensions of the person-environment relationship, this thesis offers constructive measures to improve nurses’ occupational behaviour.

Nurses’ occupational behaviour, especially increased turnover rate, has been of a great concern in Australian nursing. A Commonwealth Government report shows that Australia may confront a shortage of 31,000 nurses by 2006 with 22,000 currently employed nurses leaving their jobs in the next 4 years (National Review of Nursing Education, 2002). In Victoria, the figure for the nursing shortage is expected to increase up to 5500 by 2008 (Department of Human Services, as cited in Nurse Recruitment and Retention Committee, 2001). Another recent research study also reports that 67% of nurses, surveyed in Victorian metropolitan and regional institutions, had once thought about leaving the nursing profession (Healy & McKay, 1999).

Nurses are also concerned about nurses’ job performance, which can be decreased by environment oppressing nurses’ need to practice professionally (Kendall, 1992; Lewis & Urmston, 2000). Moreover, low work efficiency of some nurses places undue demand on other nurses, who attempt to maintain a high standard of care. As a result, an atmosphere of low work motivation may spread and occupy the health care environment.

Nursing scholars have made tremendous efforts to maintain nurses’ motivation to deliver excellent care by introducing new management systems, which are assumed to satisfy nurses’ needs. In the same vein, they have attempted to identify the causes of increased turnover intention of nurses by focusing on environmental factors such as the public images of nurses and/or the characteristics of an oppressive health care environment. However, these conventional ways of exploration undermines
professional needs of nurses and the relationship between the nurses’ needs and environmental characteristics. Consequently, the counter measures developed based on these studies may be less effective in increasing nurses’ work motivation.

If nurses’ work motivation continues to decrease, its outcome does not only cost society, but also rebounds to nurses by further impairing their public image. Decreased performance betrays social expectation to receive a high standard of nursing care. It also emphasises an unprofessional image of nurses to the public. In a similar way, a high turnover rate does not only reduce the capacity of hospitals to accommodate patients, but it has also caused economic demands for nursing recruitment. Currently, campaigns for nursing recruitment are underway in order to increase the nursing work force. The Victorian Government had also funded a statewide advertising campaign as well as nursing re-entry programs (Nursing Recruitment and Retention Committee, Government Response, 2001). Hospitals are not exempted from this expenditure. In the USA, replacing one RN is estimated to cost US$ 92,442, whilst replacing one specialising RN would cost US$ 145,000 (Atencio, Cohen & Bobbye, 2003). A high turnover rate may also affect the nursing image in a way that makes the public believe that nurses are not committed to their profession. In addition, it makes the public believe that no one wants to do nursing. Thus, a vicious circle may be perpetuated by the negative public image of nurses, the person-environment misfit in nursing and nurses’ decreased occupational performance. Within this circle, government and hospital funding for nursing recruitment may be wasted.

By identifying the relationship between nurses’ professional needs and the environmental capacity to fulfil their needs, and by making attempts to increase congruence between these two factors (i.e., enhancing the person-environment fit in nursing), nurses’ job performance and intention to remain in nursing could be better improved. Moreover, by exploring how stereotypical public images of nursing may contribute to the person-environment misfit in nursing and how the misfit may affect nurses’ occupational behaviour, nurses’ voice for a need to improve the public images of nurses (Dahl, 1992; Royal College of Nursing, Australia, 1996) will be more justified and may receive better support from society. This thesis seeks to provide insight into relationships between the characteristics of current social and health care environments and nurses’ needs/preferences in their images, roles and work values.
The thesis also offers remedial measures to improve nurses’ occupational behaviour based on the findings.

Definitions of Terms

Before the thesis proceeds to present a conceptual framework and literature review, this section introduces the definitions of the major terms used.

- **Image**: Image is a mental representation of an object or person (The Free Dictionary, 2003). Images contain individual subjective beliefs that may or may not correspond to the truth, but serve to understand the world or to expect future events. Each individual develops images of self (self-image) or others.

- **Stereotype**: According to Ashmore and Del Boca (1981), stereotype is “a set of beliefs about the personal attributes of a group of people” (p. 16), and these beliefs are learned in a culture through socialisation. Stereotype is used to organise/process information of a particular group and has both/either positive and/or negative connotations. However, it is often used in a negative fashion such as representing a pattern of prejudice toward a particular group of people, which are relatively consistent across time and regions of a country (Katz & Braly, 1935, as cited in Ashmore & Del Boca, 1981) and may not reflect the truth.

- **Stereotypical public image of nurses**: This is defined as a set of characteristics associated with traditional views and/or unexamined fixed ideas of nurses held by the public. These views and ideas may or may not reflect actual behaviour and performance of nurses.

- **Nurses’ self-concept**: Self-concept is generally defined as self-relevant beliefs, images and thoughts about one’s own nature, quality and behaviour (Brockner, 1988; Rogers, as cited in Hoffman, Vernoy & Vernoy, 1994) such as his/her personal characteristics, appearance, sex, age, social class and particular personal achievements (Argyle, 1981). Hence, nurses’ self-concept is defined as beliefs and thoughts nurses have about their nature, quality and behaviour. In this study, self-concept is used as a synonym of self-image.

- **Nurses’ role conception**: This is defined as images of roles nurses desire or expect to take. In short, role conception is idealised nursing roles for nurses (Corwin, 1961).
• Actual nursing role: This is defined as tasks or functions nurses perceive they actually engage in or are assigned to, in their daily practice.

• Nurses’ work values: Nurses’ work values represent conscious desires held by nurses (French & Kahn, 1962), and encompass what they want/desire and ought to receive from their work environment (French & Kahn, 1962; Nord, Brief, Atieh & Doherty, 1990) in exchange for their performance or to actualise their roles. Work values include nurses’ desires for professional rewards (e.g., sense of accomplishment, monetary reward, career advancement and respect by others), professional challenges (e.g., intellectual stimulation) and organisational support (e.g., job security).

• Environmental supplies: The term ‘environmental supplies’ is commonly used to represent the characteristics of an organisational environment in the person-environment fit study. In this study, the environmental supplies are defined as nurses’ perceptions of the characteristics of their work environment that are measured in contrast with their work values. The environmental supplies, for example, include better pay and autonomy and career advancement structure, which the health care environment supplies to nurses in order to reinforce their work values.

• Health care environment: The health care environment is a context where nurses enact their responsibilities to promote human well-being, and work interdisciplinarily with other health care professionals. In this study, the health care environment is attributed to health care organisations/institutions such as hospitals. The characteristics of the health care environment are influenced by institutional policies and interests of various health care professionals including nurses and others. The institutional policies and the degree of power other health care professionals possess are, in turn, influenced by social demands and the public’s opinions about values they attach to each profession.

• Person-environment fit (misfit): Fit is referred to as “an employee’s perceived compatibility or comfort with an organisation and with his or her environment” (Mitchell et al., 2001, p. 1104). Person-environment fit occurs when there is a harmonious relationship (correspondence) between personal orientation and environmental characteristics (Dawis & Lofquist, 1984). In contrast, the person-
environment misfit occurs when the environment over or under-reinforces employees’ needs/orientations.

- Person-environment-occupation (mis)fit in nursing: Generally speaking, the concept of environment in person-environment fit theories/studies includes not only the characteristics of the environment, but also occupational factors such as work demands and tasks. Law et al. (1996) differentiates occupational factors from those of environment so as to clarify various dimensions of (in)congruence. According to Law et al., person-environment-occupation (mis)fit is defined as (in)congruence between the attributes of the person, environment, and occupation. The person-environment-occupation (mis)fit in nursing in this study refers to as (in)compatibility or (non)correspondence between nurses’ professional orientation (such as self-concept, role-conception, and work values) and abilities of the environment and occupation to reinforce them.

- Image fit/misfit: This refers to congruence/discrepancy in the image of nursing/nurses held by nurses and the public. However, this study explores the public image of nurses through nurses’ perception. Hence, in a methodological sense, it refers to the differences between nurses’ view of themselves and their perceptions of their public image.

- Role fit/misfit: This is defined as congruence/discrepancy between the ideal roles nurses desire to take and the actual roles they engage during their clinical practice (Corwin, 1961). In other words, role fit refers to the correspondence between nurses’ role conception and their perception of the actual roles.

- Value-supply fit/misfit: This is defined as congruence/discrepancy between rewards nurses aspire to receive from their environment (i.e., work values) and actual supplies they receive from the environment.

- Job performance: This is defined as nurses’ behaviour that is related to their roles and tasks and that contributes to organisational effectiveness (Goodman & Svyantek, 1999).

- Turnover intention: This study adopts a broad definition for turnover intention. Borrowing the definition of turnover cognition, turnover intention refers to attitudinal (thinking of quitting), decisional (intention to quit), and behavioural
(searching for a new job) processes proceeding voluntary turnover (Lance, 1991; Lum, Kervin, Clark, Reid & Sirola, 1998; Sager, Griffeth & Hom, 1998).

- Collective self-esteem: In general, collective self-esteem refers to people’s evaluation of the value placed on their social groups (Luftanen & Crocker, 1992; Crocker & Major, 1989). Luftanen and Crocker (1992) identified four dimensions of collective self-esteem, which are membership, private, public and identity self-esteem. In this study, membership self-esteem, which is defined as how good or worthy individuals think they are as members of their social groups, is used. Thus, nurses’ collective self-esteem is defined as nurses’ evaluation of their worthiness as a member of the nursing profession.

Organisation of the Thesis

Chapter 1 has described the purpose of the thesis, the research questions, and the background and significance of the thesis. Chapter 2 proceeds to introduce a conceptual model, which is based on the Person-Environment-Occupation Model of Occupational Performance, and guides the literature review and hypothesis formation. Chapter 3 reviews and critiques the findings of relevant literature in nursing and other related disciplines based on the conceptual model, and identifies knowledge gaps. The information obtained by the literature review is integrated into the conceptual model, and study hypotheses are drawn in Chapter 4. Chapter 5 proceeds to the methods of investigation for both quantitative and qualitative approaches. The results of a preliminary analysis, including those of factor analysis, descriptive statistics and Pearson correlation, are reported in Chapter 6. The findings of the hypothesis testing are presented in Chapter 7. Finally, Chapter 8 discusses the results of the quantitative study and explore strategies to improve nurses’ occupational behaviour. The results of a focus group exploration of the meaning of the overall results are incorporated in this discussion. In addition, Chapter 8 presents the strengths of the thesis, the thesis’s limitations and areas for further investigation, and draws conclusions.
CHAPTER 2: CONCEPTUAL MODEL

Introduction

The aims of this thesis were to explore how the image of nurses would affect nursing practice, and how nurses would perceive the compatibility between their professional needs and actual nursing practice. In addition, this thesis aimed to examine how this perceived compatibility would contribute to nurses’ occupational behaviour. To investigate the research questions, this chapter introduces a conceptual model that guides the literature review and lays the foundation for the study hypotheses in the subsequent chapters.

The conceptual model was based on the Person-Environment-Occupation Model of Occupational Performance (the PEO model) (Law et al., 1996). The PEO model concerns employees’ personal factors such as self-belief, abilities and needs, and how these factors are congruent with the environmental characteristics and occupational challenges. The model also depicts how the congruence between personal, environmental and occupational factors influences a person’s occupational behaviour. This model was selected for this thesis because it placed mutual emphasis on both employees’ personal, environmental and occupational factors, and allowed the researcher to investigate various aspects of the fit between them. The outcomes of fit on employees’ job performance and turnover intention could also be examined using this model. First, this chapter presents the PEO model.

In addition, the chapter introduces two concepts, which were integrated into the PEO model, and ensures the model is comprehensive enough to deal with all the study questions posed in the previous chapter. The first concept is the Nursing Universe (Styles, 1982), which describes the social system such as society, nursing profession and practice that surround individual nurses. The integration of this concept allowed this study to conceptualise how beliefs and images of nurses held by society and the nursing profession might influence the nurse-environment-occupation relationship. The second concept is the psychological environment of the individual, which is the mental representation (or the individual’s subjective construction) of the world (French & Kahn, 1962). Individuals are found to perceive and interpret their environment slightly differently according to their personal characteristics. The integration of this concept, therefore, allowed this model to express the variability and the uniqueness of each individual’s perception of the environment, and improved the
model in a more comprehensive fashion. Finally, this chapter presents a revised PEO model for nursing.

The PEO Model

Rationale for Adopting the PEO Model

Numerous psychologists have made significant efforts to uncover the antecedents of employees’ work-related behaviour. From the 1950s to 1980s, researchers’ attention was directed toward either environmental factors such as interpersonal relations, power structures, task meaningfulness, physical working conditions, and intrinsic and extrinsic reward structures (Hackman, Oldham, Janson & Purdy, 1975; Herzberg, Mausner & Snyderman, 1959; Kanter, 1993), or employees’ personal factors such as values, needs and expectations (e.g., Vroom, 1984). While each of these factors was found to uniquely contribute to employees’ behaviours, studying environmental and personal factors separately limited a full account of employees’ job performance and turnover intention. That is, these studies failed to explain why employees respond differently to the same environmental characteristics, or why employees with certain personal dispositions succeed in one organisational environment, but fail in another (Magnusson & Törestad, 1992). For instance, employees with a high need for autonomy may thrive in environments where independent practice and an opportunity to participate in decision-making are nurtured. But they may be frustrated in environments where subordination is supported. Alternatively, employees with a low need for responsibility may be better off working under supervision, but may be stressed when a high amount of responsibility is assigned. This notion has driven psychologists to focus equally on both environmental and personal factors.

Theories concerning the person-environment fit have emerged from the above perspectives. These theories contend that personal needs and preferences must be congruent or correspondent to environmental characteristics in order to achieve adjustment (Dawis & Lofquist, 1984; French & Kahn, 1962). A successful adjustment results in job satisfaction, increased job performance, effective socialisation, and decreased turnover rate (Schneider, Smith & Goldstein, 1992; Walsh & Holland, 1992). Various theories explain specific dimensions of the person-environment relationship. For example, one theory underscores harmonious relationships between
employees’ abilities and values, and environmental abilities to reinforce those abilities and values (Dawis, 2000; Dawis & Lofquist, 1984; Lofquist & Dawis, 1991). Another theory places interest on the personality of an employee in a given organisation and how his/her personality is congruent with personalities of others in that environment (Holland, 1985; Swanson & Chu, 2000; Walsh & Holland, 1992). While the person-environment fit theories tend to emphasise only a few factors of the person-environment relationship, the PEO model attempts to encompass several factors by integrating various theories (Law et al., 1996; Letts et al., 1994; Strong et al., 1999). The PEO model also separates the occupational components from those of the environment, so that an examination of various relationships between the person and the environment, and the person and the occupation is possible. This separation compensates for criticism that the person-environment relationship rarely involves a single dimension of the person and the environment (Pervin, 1992). Moreover, developing the theories to a more comprehensive and abstract level (i.e., development of a model) enhances its applicability to diverse occupational fields including nursing. However, due to its abstractness, explanations from other person-environment fit theories are added in order to provide more concrete accounts of the relationship between the person, the environment and the occupation.

**The Person-Environment-Occupation Model of Occupational Performance**

The PEO model was developed by Law et al. (1996) as a framework for occupational therapists to identify various forms of incongruence that affect employees’ occupational behaviour. The model emphasises a dynamic interaction between the person, the environment and the occupation (Law et al., 1996). The following introduces the major concepts and the relational propositions of the PEO model.

**The Person**

According to the PEO model, the person is defined as a unique being comprising of a set of attributes (termed performance components), which have mindful (conscious), bodily and spiritual qualities. A review of person-environment fit theories indicates that the mind quality of the performance components may include a person’s self-beliefs/concept (Swindle & Moos, 1992), identity (Hogan & Roberts, 2000) and personality style (Holland, 1985; Walsh & Holland, 1992). The
bodily quality may encompass general health, physical abilities, sensory capabilities, cognitive aptitude and motor skills (Dawis, 2000; Dawis & Lofquist, 1984; Kielhofner, 1995; Law et al., 1996; Lofquist & Dawis, 1991) with which a person is capable, competent and skilled to perform certain tasks and roles. The spiritual quality may include a person’s motivation to fulfil his/her values (Dawis, 2000; Dawis & Lofquist, 1984; Kielhofner, 1995; Lofquist & Dawis, 1991) and personal goals (Little, 2000; Schkade & Schultz, 1992). These values may be socio-cultural values (Stokols, 1990), role-related values such as employees’ needs to engage in the roles of their responsibilities (i.e., role conception), and/or work-related values such as needs for rewards, autonomous practice, and career advancement opportunities (i.e., work values).

This diversity of personal attributes suggests that nurses have several performance components. One of these attributes includes the professional self-concept of nurses (mind quality). Another is the physiological and cognitive abilities of nurses and their skills to perform their professional roles such as caring and decision-making roles (bodily quality). Nurses also have a desire to utilise their skills/abilities to fulfil their professional roles (role conception) as well as a desire to fulfil their work values such as a need for autonomy and respect, which satisfy their professional values (spiritual quality). In this thesis, nurses’ professional self-concept, role conception and work values are explored. However, nurses’ skills are not included in this study, as nurses’ clinical skills have been standardised by competency tests for registration.

The PEO model assumes that the person is a holistic and developmental being who is in a reciprocal interaction with the environment and the occupation. The person as a holistic entity indicates that the person is an integrated being whose mind, body and spirit are so interdependent that they cannot be separated from one another. The developmental aspect of the person assumes growth of the person throughout the lifespan. Finally, a transactive relationship between the person, the environment and the occupation denotes that these components are so interdependent that a change in one part of the performance components, as a result of growth, affects the person as a whole, and this change subsequently affects the environment and the occupation. In this sense, the person is viewed as an active agent who influences or is influenced by the environment and the occupation (Law et al., 1996; Magnusson & Törestrand, 1992; Wapner & Demick, 2000). For instance, nurses develop a professional self-concept
through professional socialisation (Laing, 1993; Strasen, 1992). Their belief that they are respected members of the health care team may lead to such expectations that they are obliged to engage in decision-making and satisfy their caring role. Their belief may also inspire them to pursue autonomous practice and social recognition that are important aspects of a profession (Pavalko, 1971). As nurses are active agents, they have attempted to change the health care environment and nursing practice in a way that fulfils their professional values (McCoppin & Gardner, 1994). However, their journey to professionalisation is also influenced by the current state of the health care environment, which may be oppressive (Hiraki, 1998; Kendall, 1992; Spitzer, 1998).

*The Environment*

The environment in the PEO model entails the cultural, socio-economic, institutional, physical and social components which assume equal importance. The environment also includes groups of people regardless of the size of the groups, with diverse roles and responsibilities, and with diverse degrees of power (Law et al., 1996). This diversity suggests that the environment surrounding nurses is influenced by economic trends, social norms, organisational cultures, and groups of various health professionals (and professional organisations) who have various degrees of power over nursing. While the environment in the PEO model includes the social, professional and organisational dimensions, the present study separates the organisational dimension (i.e., the health care organisation/environment) from macro environmental factors including the social and professional environment, which surround health care institutions. This separation is important because one of the thesis’s purposes is to investigate nurses’ work values and how their values are reinforced in the health care environment. In addition, separating macro factors such as social norms and nursing professional world from the health care environment makes it easier for the study framework to illustrate how society and the nursing profession influence nurses, nursing roles and the health care environment more clearly. These influences are discussed later in this chapter. In the following section, only the relationship between nurses (the person), the health care environment and nursing (the occupation) is discussed.

The health care environment provides nurses with a certain number of professional rewards, challenges and support (i.e., environmental supplies) in accordance with values the organisation places on nursing. These environmental
supplies may or may not be congruent with nurses’ work values. The characteristics of the environmental supplies change, as the environment is viewed as changing and having temporary aspects (Law et al., 1996). For instance, the health care environment in the 1960s is different from that of the 1980s, as Australian nurses’ collective action in the 1980s changed the health care environment in a way that improved nurses’ working conditions and pay (McCoppin & Gardner, 1994).

The Occupation

The occupation is defined as the “self-directed, functional tasks and activities in which a person engages over the lifespan” (Law et al., 1996, p. 16). Unlike other person-environment fit theories, the PEO model separates a concept of the occupation from that of the environment so as to make a distinction between them, and direct interventionists’ attention to both aspects to an equal importance. The model describes the occupation based on Christiansen and Baum’s concepts of activity, task and occupation (Law et al., 1996). The activity is referred to as the basic unit of a task, such as the act of writing, which nurses complete as part of their daily occupational experience. The task encompasses a set of activities such as observing a patient, identifying and interpreting a patient’s problems and compiling a record of the task completed. Nursing professional roles consist of such tasks as conducting nursing diagnoses, planning and executing patient care, protecting clients’ rights, and engaging in clinical/ethical decision-making (Australian Nursing Council, Inc., 2000). Nurses engage in these roles to express their professional identity and integrity. However, their desired roles (i.e., role conception) may not be fully actualised in their actual practice (i.e., the occupation) due to the lack of opportunities to engage in decision-making and insufficient time to complete patient care due to low recognition toward nursing and heavy workloads (Nurse Recruitment and Retention Committee, 2001).

According to the PEO model, the occupation also has temporary aspects as activities and tasks have time patterns and rhythms (Law et al., 1996). For instance, nurses’ everyday workload changes in accordance with the number of patients assigned.
Person-Environment-Occupation Fit

Fit refers to “an employee’s perceived compatibility or comfort with an organisation and with his or her environment” (Mitchell et al., 2001, p. 1104). The fit occurs when there is a harmonious relationship (correspondence) between the personal orientation and the environmental/occupational characteristics (Dawis & Lofquist, 1984). When there is a harmonious relationship between them, the person achieves adjustment to their work and environment. As the PEO model encompasses diverse aspects of the person, the environment and the occupation, the relationships between these three components are versatile. The fit may include a harmonious relationship between the job interests of the person and the environment where groups of people share the same types of occupational skills and interest (Walsh & Holland, 1992). The fit can also represent congruence between professional values the person embraces and the environmental/organisational culture that reinforces those values (Lofquist & Dawis, 1991; O’Reilly, Chatman & Caldwell, 1991), and congruence between employees’ occupational identity, and occupational roles and social recognition that reinforce their identity (Hogan & Roberts, 2000). The additional dimensions of fit include correspondence between employees’ skills/abilities and occupational challenges that utilise their abilities/skills (Lofquist & Dawis, 1991), and correspondence between employees’ needs to maintain physical well-being and physical environment that provides necessary features for health promotion (Heerwagen, Heubach, Montgomery & Weimer, 1995; Lachterman & Meir, 2004). The closer the person’s needs are to the environmental/occupational characteristics, the greater the PEO fit is. In contrast, the more deviant the person’s needs are from the environmental/occupational characteristics in either an excess or deficit way, the greater the misfit is.

Therefore, for nurses to experience the PEO fit, their professional needs (performance components) must be reinforced by both occupational roles and the supplies from the health care environment. More specifically, nurses’ needs to engage in patient care and decision-making must be fulfilled by their current occupational assignments/tasks. Furthermore, their needs to fulfil their work values including needs for autonomous practice, respect from others, and career advancement opportunities must be reinforced by the health care environment.
The PEO model also contends that the relationship between the person, the environment and the occupation is dynamic. The person, the environment and the occupation are never static and change with different paces and rhythms (although it is reasonable to assume that there may be stagnated stages). This concept of dynamism suggests that the person-environment-occupation relationship is continuously transforming throughout the lifespan, as one dimension of the relationship goes through change (Law et al., 1996). For instance, nurses have experienced the PEO fit at a particular point. But when they acquire a new skill and they see little opportunity to utilise such a skill in their practice, then they will experience a misfit. The skill acquisition might also change nurses’ work values such as increasing the need for autonomous practice. If this need is not satisfied in their environment, it will create another dimension of the PEO misfit.

As has been noted, the person is considered as a negotiating agent, who influences and is influenced by environment/occupation in order to achieve adjustment (Law et al., 1996). When the environment and the occupation are responsive to employees’ needs and provide a desired level of environmental supplies and occupational challenges, employees achieve adjustment and their personal growth is fostered. When there is a maladjustment or misfit, individuals may be motivated to modify environmental characteristics in a way that reinforces their skills and needs. For example, nurses’ self-beliefs such as being capable of taking responsibility for their actions may motivate them to alter the environment in a way in which the health care environment provides more autonomy to them or assigns them a role which requires more responsibility. This may occur due to nurses’ needs to maintain their intrinsic needs/values. In contrast, changes in the environment may alter the needs and preferences of nurses. Cost containment and redundancy might modify nurses’ need for increase in salary. Nurses may also adjust themselves to the oppressive health care environment, and internalise such self-belief as “I am not good enough to take responsibilities”. This conformity reduces the PEO misfit experienced by nurses. Law et al. (1996) maintains that personal attributes influence the way the person interacts with the environment and the occupation.

**Occupational Performance**

An outcome of the fit between the person, the environment and the occupation is manifested in the person’s occupational behaviour, or what is called occupational
performance in the PEO model. Law et al. (1996) define occupational performance as “the dynamic experience of a person engaged in purposeful activities and tasks within an environment” (p. 16). The PEO model does not specify facets of occupational performance. From studies and theories pertaining to the person-environment fit, however, it is assumed that the occupational performance includes behavioural (job/task performance) (Goodman & Svyante, 1999), affective/attitudinal (job satisfaction, commitment, and turnover intention) (Dawis & Lofquist, 1984; O’Reilly, Chatman and Caldwell, 1991; Walsh & Holland, 1992), and cognitive performance (innovative work behaviour) (Janssen, 2000). Therefore, when nurses experience fit with their occupation and environment, their job performance and the propensity to remain in the current job will be enhanced.

Assessing the PEO Relationship

The PEO model offers a rich illustration of the dynamic relationships between the person, the environment and the occupation, and how the fit is transformed in an ongoing development of these three components. To examine the PEO relationship, Law et al. (1996) articulate the importance of targeting the person, the environment and the occupation in a mutual manner. In other words, each of the person’s performance components (that is, the person’s mindful, bodily and spiritual qualities), the components of occupation such as occupational roles, activities and tasks, and the environmental conditions requires a careful examination to identify occupational strength and problems of the relationship. In application to nursing, nurses’ performance component (e.g., nurses’ self-concept, role conception and their work values) must be compared with their occupational components (e.g., actual nursing roles, tasks and activities), and the characteristics of the environmental supplies (e.g., career advancement structure, the amount of autonomy given, respect from others within the health care environment) in order to assess the degree of fit between them. The examination of each component and its relationship with other components allows investigators to develop strategies to elicit changes in order to maximise the PEO fit and occupational performance (Law et al., 1996). In fact, this model has been utilised in occupational therapy to assess the strengths and problems of each component and relationship, and to develop remedial interventions to maximise the PEO fit (Green & Cooper, 2000; Peachey-Hill & Law, 2000; Strong et al, 1999). Therefore, adopting this model allows the researcher to investigate how nurses’
expectations in their roles and values are (in)congruent with actual roles and values assigned to them in their practice and what measures are necessary to improve the fit between them.

Figure 2.1. The Person-Environment-Occupation Model of Occupational Performance applied to the nursing context.

The PEO relationship in nursing is presented in Figure 2.1. In this model, concepts of the nurse, health care environment and nursing (roles) are represented as circles. The overlapping parts of the circles indicate the PEO fit and occupational
performance. The more overlapping each circle is, the more harmoniously these components are interacting. This congruence or fit satisfies a person’s mind, body and spirit, thus leading to a greater occupational performance (Law et al., 1996).

Improving the PEO Model

The PEO model illustrates the dynamic relationships between the person (nurse), environment and occupation (nursing), and the impact of these relationships on individuals’ occupational performance. This model particularly explains the research questions posed in the previous chapter such as how the relationships between the ideal and actual nursing practice (in terms of their roles and values) could affect job performance and turnover intention. Nevertheless, the model needs to be further improved by taking additional factors into consideration so as to answer all the study questions.

The first factor to be considered was the context of nursing. Although, the PEO model maintains that the components of the environment encompass macro factors such as social norms, which influence the relationships with the person and occupation, it does not fully explain what kinds of contextual factors influence the PEO relationships in nursing and in what ways. Identifying these factors is important, as nurses, nursing and the health care environment do not exist independently, but are fabricated in a social structure. Within this social context, groups of people have different images of what nurses should be, do and deserve, and utilise their power to determine the courses of nurses, nursing and the health care system. Therefore, this study integrated the Nursing Universe Model (Styles, 1982), which illustrates the multi-layered social system surrounding nurses and nursing practice. Integration of the model helped to conceptualise how the images of nurses held by different components of the universe (e.g., society and the nursing profession) might affect the PEO relationship in nursing, whose information is not provided by the PEO model. Moreover, it helped to negate a criticism that investigators who use the person-environment fit theories tend to ignore the impact of cultural and contextual factors surrounding the person and their environment (Swartz-Kulstad & Martin, 2000).

The second factor considered was the psychological environment of individuals. The psychological environment refers to a person’s mental representation of the world, where the information from the social environment is cognitively processed (French & Kahn, 1962). Each individual selectively attends to certain
information in their social environment, perceives and interprets it differently, and makes sense of the world. In other words, one’s mental representation of the world may contain only fragmental information of the social environment. Moreover, an individual’s mental representation of the world may not correspond to realities in the social environment, as his/her perceptions/interpretations may be distorted in accordance with what he/she wants to see or value in the environment (French & Kahn, 1962). Researchers using the person-environment fit have been aware of how individuals’ subjective perceptions and interpretations of their environment lead to variation of the fit experienced by each individual in a given situation. They have also been aware that it is the individuals’ subjective perception and interpretation of the fit that affect individuals’ behaviour (French & Kahn, 1962; Dunn, Brown & McGuigan, 1994; Stokols, 1990, 1992; Little, 2000; Magnusson & Törestad, 1992; Walsh, Price & Craik, 1992). Therefore, studying the PEO fit from the subjective perceptions/interpretations of nurses was believed to capture more vivid phenomena confronting nurses as well as to strengthen the relationship between the fit and its impact on their occupational performance.

Integrating these two concepts allowed the PEO model to encapsulate more global and dynamic relationships between the nurse, nursing and the health care environment, and enabled it to answer the study questions more fully. The subsequent section provides brief explanations of the nursing universe and factors, which may influence individuals’ perceptions/interpretations of themselves and their environment.

Overview of the Nursing Universe Model

A social system exists at all levels in the environment, from micro systems of persons and families, larger systems of organisational and community groups, and to macro systems as societies and cultures. These systems never exist independent of one another (Anderson, Carter & Lowe, 1999). Anderson et al. elucidate that “each entity is simultaneously a part and a whole. A social unit is made up of parts to which it is the whole, the suprasystem, and at the same time is part of some larger whole of which it is a component or subsystem” (p. 5).

Styles (1982) specifies the nursing social system as “the nursing universe” (p. 65). According to this model, the nursing universe consists of three spheres, the individual nurse, nursing practice and the profession, and the social context. The individual nurse forms the core of the universe, and is surrounded by the practice and
the profession sphere, which comprises nursing services and settings. Nursing knowledge and values are developed, provided, and conveyed to nurses within this sphere. The social context encloses these two spheres, and includes other health professional groups, government and the public (Styles, 1982). For instance, the nursing profession is considered a suprasystem to which nurses belong. At the same time, the nursing profession is a part of a larger system such as society.

In the Nursing Universe Model, Styles (1982) treats nursing practice and the profession as in the same sphere. However, this thesis considers these as separate spheres: the nursing profession sphere in which nursing knowledge and skills are developed and maintained, and the nursing practice sphere in which individual nurses carry out their roles (occupational component) using specialised knowledge and skills within the health care environment (environmental component). This decision has been made in this thesis because the degree of authority nurses have over the nursing profession may be greater than over nursing practice, as it is nurses’ responsibility to improve and regulate the nursing professionalism. On the other hand, nursing practice (i.e., actual nursing roles and the environmental supplies available to nurses) may not be fully controlled by nurses, as it is also influenced by such factors as social demands, economic trends, institutional policies and the interests of other health care professionals. Separating the nursing profession sphere from that of the practice sphere also allows this study to integrate the Nursing Universe Model into the PEO model in a more meaningful manner as presented in Figure 2.2.
Each system has subsystems, which are interdependent on one another. Dynamic relationships exist between subsystems and within a subsystem. By mobilising and transferring energy and information, subsystems influence one another dynamically, and are receptive (open system) or not receptive (closed system). This mobilisation of energy and information sometimes means one subsystem can control another. In this way, the relationships among subsystems can be hierarchical or vertical. Dynamic relationships exist among subsystems, which mobilise or change the state of a system. But, at the same time, these subsystems maintain themselves in a steady balance (Anderson et al., 1999).

The spheres (i.e., the subsystems) in the nursing universe also directly and indirectly interact and/or influence one another in order to maintain nursing practice within the universe (Styles, 1982). As nurses, nursing and the health care environment exist within the social system, the Nursing Universe Model implies that the person-environment-occupation relationship in nursing may be influenced by how society and the nursing profession view nursing. For example, if society understands, appreciates and supports nursing practice as the nursing profession does, nurses will be allowed to express their professional self-concept more fully, and be encouraged to
engage in caring and decision-making roles as their occupational activities. In addition, nurses’ work values such as autonomous practice and career advancement opportunities will be reinforced in the health care environment, which further contribute to developing professional self-concept. In such an event, there will be a harmonious relationship between nurses, the health care environment and nursing role.

On the other hand, if society and the nursing profession have different views toward nursing, different forces that improve or constrain nursing’s professionalisation may be operative within the universe. Literature suggests that stereotypes individuals hold toward a certain group (e.g., nursing profession) influence their attitudes and behaviour toward the members of the group (Ashmore & Del Boca, 1981; Schneider, 2004; Snyder, 1981). Consequently, socially held stereotypical nursing images might influence the public’s attitudes toward nurses and result in society not offering full endorsement for nursing’s professionalisation. Indeed, many nursing scholars are concerned that nursing stereotypes influence social, cultural and political factors in nursing and the health care environment (Cunningham, 1999; Hallam, 1998; Kitson, 1996, 1997; Roberts, 1983, 1997). An unequal relationship with physicians, a lack of autonomous practice, limited career paths, a lack of opportunities to engage in decision-making, under utilisation of skills and being under-paid are often negative factors reported by nurses (Buchanan & Considine, 2002; Manias & Street, 2001; Nurse Recruitment and Retention Committee, 2001; O’Donnell, 1996). Some nursing scholars also proclaim that the nursing stereotyping is internalised by many nurses, which results in producing nurses with poor self-images (Bridges, 1990; Greenwood, 1999; Kalisch & Kalisch, 1986). By denying nursing’s full professional practice, society can confirm their stereotypical beliefs of nurses.

In contrast, nursing’s movement toward professionalisation have had a positive impact on the nurse, nursing and the environment. Nursing has made significant progress toward professionalisation over past decades (Kelly & Joel, 1996; Russell, 2000). In fact, the nursing profession has endeavoured to establish a strong knowledge base, by educating nurses in university settings as preparation for professional practice and research. Laing (1993) and Strasen (1992) maintain that socialisation in the nursing profession/culture allows a nurse to assimilate professional self-concept, skills, knowledge and values. Advancement in professionalisation of nursing has also encouraged nurses to improve nursing practice and their work.
Nursing roles have been expanding in diverse fields and levels. In addition, more nurses are seeking improvements in their work environment (Kendall, 1992), pursuing autonomy and recognition (Kelly & Joel, 1996), engaging in overt conversations with medical professionals and participating in decision-making (Porter, 1995). These movements toward professionalisation contradicts the social tendency to constrain nursing in a subordinate position, which results from the nursing stereotyping influencing the social image/expectations of nursing.

Nursing’s endeavour to achieve full professional status and society’s tendency to preserve nurse stereotyping seem to affect nurses, nursing roles and the health care environment differently. If the social opinions and the nursing profession have the same degree of influence over the nurse, nursing and the environment, nurses may experience a harmonious relationship between their compromised professional needs and compromised nursing roles and environmental supplies. On the other hand, if society and the nursing profession have different degrees of power over the course of nursing (i.e., nurses, nursing roles and their environment), this may create a vertical control of one sphere over the other, causing a PEO misfit in nursing. For instance, the nursing profession might have more influence over nurses than the social context might have, and social beliefs might have more influence over the nursing roles and the health care environment than the nursing profession might have. In such an event, nurses would develop a professional orientation as a result of nursing’s advancement toward professionalisation. On the other hand, actual nursing roles and the supplies the health care environment provides nurses would be constrained due to the stereotypical public image of nurses. Consequently, a PEO misfit would occur between nurses’ professional needs, constrained nursing roles and a lack of environmental supplies. Figure 2.3 illuminates the dynamic PEO relationships within the nursing universe.
Figure 2.3. Dynamic relationships between the nursing universe and the PEO fit.

**Note:**

1. "A" arrows represent the influence of the social context, while "B" arrows represent the influence from the nursing profession.
2. When the social context and nursing profession share the same views toward nursing, a greater PEO fit is achieved.
3. When the social context and the nursing professional have different views toward nursing, but the forces/influences from both spheres over the nurse, nursing and the health care environment are equal, a PEO fit may be achieved.

**Poor PEO fit**

**Note:**

1. "A" arrows represent the influence of the social context, while "B" arrows represent the influence of the nursing profession.
2. The solid arrows represent a stronger force (influence), and the broken arrows indicate a weaker force (influence).
3. When there are different degrees of force/influence over each component in the PEO relationship, the PEO fit may be poor.
Psychological Environment of Individuals

The relationships between the nursing universe and the PEO fit are also influenced by how each individual perceives and interprets these phenomena in his/her psychological environment. For example, each nurse may perceive and interpret the public image of them and their profession differently. Some nurses may view the public image of themselves more favourably than others. They may also comprehend how the forces from society and the nursing profession affect themselves, their roles and environment differently. The concept of the psychological environment informs that each individual lives in only his/her subjectively construed environment. Objective reality of the world is outside the boundary of this psychological environment. Individuals understand their world only after they selectively attend to phenomena in this objective social world (or fragments of it), perceive/interpret the phenomena subjectively, and construct their subjective world (psychological environment). Individuals understand the world which they think is true in their psychological environment, and only phenomena understood in their psychological environment affect their behaviour (French & Kahn, 1962). This subjective understanding of the world results in individual nurses experiencing various degrees of PEO fit in a given situation.

Various personal characteristics have been identified, which influence the information processing in the psychological environment of individuals. The first personal characteristic that may affect their information processing is individual self-motivation. The related variables are individual personality (Lofquist & Dawis, 1991; Veitch & Arkelin, 1995) or self-concept, self-efficacy (VanYperen, 1998), self-esteem (e.g., Brit, Doherty and Schlenker, 1997) and locus of control (Schmitz, Neumann & Oppermann, 2000). An individual embraces a number of self-beliefs (concepts), which are organised in a self-schema (Markus & Wurf, 1987) or as a construct (Kelly, 1991). Ruvolo and Markus (1992) assert that self-concept is a dynamic interpretive structure that leads individuals to manipulate perception and interpretation of information. This is because when individuals interact with their environment, they are motivated to receive information that confirms their self-beliefs to feel secure (Swann, 1987; Swann, Milton & Polzer, 2000) or that enhances self-image to feel good about self (Epstein, 1973; Kelly, 1991; Rosenberg, 1967/1968, 1973; Tajfel & Turner, 1986) by manipulating perceptions/interpretation of external
information relevant to themselves. In addition, a review of the literature indicates that people with a stronger motivation to enhance self-view (i.e., people with strong self-efficacy, locus of control and self-esteem) are more inclined to manipulate information to enhance self-images. Individual motivation also affect perception and interpretation of environmental events (Cohen, 1959/1968; Spokane, Meir & Catalano, 2000). Therefore, nurses with higher self-esteem may perceive their public image, occupation and environment more favourably than those with low self-esteem.

Another characteristic is the individual’s past experience. Individuals organise past experience into “cause maps” (Wicker, 1992, p. 173; Wicker & August, 2000, p. 208) to make sense of the world and anticipate future events. Hence, types and structure of events or experience stored in the map could impinge on one’s perceptions of internal and external environment. For instance, nurses who are constantly exposed to an unfavourable comparison with physicians for a long period of time may tend to see themselves as powerless and dependent, and perceive their occupation and environment, which provide little autonomy, to be aligned with their self-beliefs. In contrast, nurses who learned to be professionals and have experienced little exposure to the upward comparison with physicians may see such environment to be dissatisfying.

A further characteristic is individuals’ demographic variables such as the culture they belong to including gender groups and specific organisational/occupational groups (Schein, 1990), age, income and so forth (see review by Swindle & Moos, 1992). Some variables including culture, gender, and income are associated with formation of different values and needs, which affect the way people appraise, expect and respond to themselves and their environment (French & Kahn, 1962; Swindle & Moos, 1992). Other variables such as age are related to past experience. Hence, nurses who have been socialised in different types of professional cultures such as different clinical specialities, which encourage them to value specific self-images/characteristics, aptitudes, skills and environmental characteristics according to their respective roles, may perceive and evaluate their environment from different viewpoints.

The integration of the psychological environment into the PEO model is depicted in Figure 2.4.
Revised PEO Model for Nursing

The integration of the two concepts, the nursing universe and the psychological environment, enabled the PEO model to depict dynamic relationships between the nurse, nursing and the health care environment. The following section outlines an overview of the revised PEO model for nursing.

**PEO within the Nursing Universe**

The nurse, nursing and the health care environment exist interdependently within the nursing universe, and are surrounded by the social context and the nursing profession. This suggests that images of nursing held by society and the nursing profession may influence the existence and the future courses of the nurse, nursing and the health care environment as well as the relationships between them. Below are the revised definitions of the concepts, which integrate the functions of social and professional images/expectations of nurses.
The Social Context (Social Environment)

The social context lies in the outer sphere of the nursing universe and consists of other health professional groups, the government and public. As the nursing profession and the health care system exist because of the demand of society, social expectations may influence how nursing services should be consumed and how nurses should be treated in the health care environment. The public’s expectations are, in turn, influenced by their images/beliefs about nursing/nurses. The public image of nursing as a profession allows nurses to express their professional self-concept through role-taking in such areas as decision-making and caring. The professional image of nursing also allows nurses to pursue autonomous practice and better working conditions. On the other hand, if the public image of nursing is stereotyped, this leads to society preventing nursing from achieving full professional status due to the social tendency to confirm stereotyped images of nurses (Snyder, 1981).

The Nursing Profession (Professional Environment)

The nursing profession exists in the inner layer of the social context. A profession is defined as possessing such characteristics as a rich body of theory and intellectual base, relevance to social values, an established system of professional education and a long training period, motivation, autonomy, commitment, sense of community, self-regulation through a statutory body, and code of ethics (Davies, 1995; Flexner, as cited in Kelly & Joel, 1996; Pavalko, 1971). The nursing profession has endeavoured to achieve full-professional status by developing a knowledge base specific to nursing, regulating and maintaining practice standards, and fostering a professional culture. These endeavours have resulted in improving the public image of nursing and nursing practice to some extent. The nursing profession has also fostered a sense of community, specialised skills and knowledge, a professional identity, self-concept and values of nurses. However, the future course of the nursing profession (and nurses) is also dependent on how nursing earns full professional recognition from society and how society sees nursing.

The Nurse (Person)

The nurse is an important dimension of the PEO relationship, which exists in the core of the nursing universe. The nurse is a holistic entity, who possesses body, mind, and spirit such as a professional self-concept, role conception and work values
as performance components, which are influenced by how society and the nursing profession view them. Within the nursing profession sphere, each nurse assimilates professional self-concept and values, and assumes roles as a health care professional who utilises specialised knowledge to contribute to the well being of people in society. Within the social context, nurses negotiate their images, roles and values with social expectations of nursing.

Nurses are also developing entities, which are in a constant transactive interaction with the ever-changing health care environment and nursing roles. Nurses strive to adapt to their environment and occupation by either distorting their perceptions and interpretation of the environment/occupation, adjusting themselves to, or changing their environment/occupation in a way that corresponds to their needs (French & Kahn, 1962; Law et al. 1996).

The Nursing (Occupation)

Nursing is another dimension, which comprises the core of the nursing universe, and is defined as a health care profession with roles that encompass activities and tasks that promote the health of individuals, families, groups, and society as a whole. This is achieved by using a specialised knowledge acquired through formal education in tertiary institutions (Roy & Andrews, 1999). Nursing roles are formed by how nurses view their professional responsibilities. However, the roles of nursing are also influenced by social opinions of how nursing services should be consumed. This indicates that the roles nurses actually take or are assigned at work may not entirely correspond to their role conception.

The Health Care Environment (Organisational Environment)

The health care environment is the last component of the core of the nursing universe, and it is the context where a nurse works with other health care professionals. The health care environment provides nurses with a certain number of professional rewards, challenges and supports in accordance with the values the organisation places on nursing. The characteristics of the health care environment may be changed by how individual nurses approach organisations to achieve their professional needs. However, the health care environment is also influenced by institutional policies and various health care professionals including physicians and hospital administrators whose dispositions, roles and power have some influence over
nursing practice. The institutional policies and the degree of power other health care professionals possess are, in turn, influenced by social demands and how the public values each of the professions (Styles, 1982).

The PEO Relationship in Nursing

Nurses come to work with a set of performance components in order to perform various nursing roles, activities and tasks. The performance components can be professional self-concept and identity as the mind quality, general health status, nursing skills and abilities as the bodily quality, and role conception and professional values as the spiritual quality (Law et al., 1996). As nurses offer abilities and skills to perform nursing tasks, the health care environment and their occupation are also expected to supply and reinforce their professional values and roles. When nurses’ role conception and work values are met by occupational challenges (i.e., the actual nursing roles) and the environmental supplies such as provision of intrinsic/extrinsic rewards, there will be a greater fit among the nurse, the health care environment, and nursing, leading to the greater occupational performance of nurses. If nurses’ values and their desired roles are not fulfilled by the environmental supplies and actual nursing roles, incongruence or misfit occurs. As the PEO relationship in nursing is influenced by the social context and the nursing profession, shared beliefs toward nursing within the nursing universe are also necessary to achieve the PEO fit.

In this sense, the PEO fit in nursing is considered a global phenomenon with multiple dimensions. In order to achieve the PEO fit, there must be a fit between nurses’ self-concept and their public image (image fit), between nurses’ role conception and actual roles offered in practice (role fit), and between nurses’ work values and environmental supplies in the health care environment (value-supply fit).

The nurse, the health care environment and nursing are transformed through different paces and rhythms, and influence each other. The social context and the nursing profession also have their own rhythm for development, and influence not only each others, but also the core of the nursing universe. Therefore, depending on how the core of the nursing universe is influenced or responds to the expectations from society and the nursing profession, relationships between the nurse, the health care environment, and nursing also change. This different pace of development creates dynamic and complex relationships between the components of the nursing universe. For instance, nurses may adapt themselves more quickly to
professionalisation of nursing and develop professional identity, skills and values, while an organisational environment still rewards them in a traditional manner that constrains nurses in a subordinate position. If the environment fails to keep pace with nursing’s advancement toward professionalisation, this will induce a greater misfit between the nurse and the environment. Incongruence between nurses’ work values and environmental supplies may be more prominent at a given time to the nurse than incongruence between their role conception and occupational requirements to reinforce them. Each incongruence is therefore, presumed to contribute uniquely to overall PEO misfit.

_Psychological Environment: Moderating the Misfit_

Nurses construct and live in their subjectively construed mental representation of the world. Within the psychological environment, perceptions and interpretations of the PEO fit may be manipulated consciously or unconsciously in accordance with individual needs. For instance, if nurses have a strong motivation to maintain positive self-image, they may be inclined to manipulate perceptions/interpretations of their public image more favourably in order to confirm/enhance their positive self-concept than those with little motivation to do so. This cognitive manipulation helps to minimise their perception of the misfit between their self-concept and the public image of them. As individuals’ mental representation of the world directly affects their occupational behaviour, this type of perception manipulation also maximises nurses’ occupational performance (French & Kahn, 1962).

The concept of the psychological environment emphasises the importance of nurses’ subjective perceptions and interpretations of their environment. This implies that objective reality such as actual public image of nurses is not as important as nurses’ subjective interpretation of their environment (i.e., how nurses believe/perceive the public see them). Hence, this thesis has explored nurses’ perceptions/interpretations of self, the public image of them and their practice to examine the effect of the PEO on nurses’ occupational performance.

_The Outcomes of the (Mis)Fit_

The outcome of the perceived PEO fit is manifested in employees’ occupational performance. Occupational performance can be job satisfaction, job performance and withdrawal behaviour such as turnover intention. When nurses
perceive the greater fit, they experience a greater job satisfaction and affiliation with the current job, and exhibit a greater job performance. In contrast, if a misfit is perceived, for instance, in the form of excess or lack of environmental supplies compared with nurses’ work values, nurses’ job performance may be reduced and their withdrawal behaviour may increase. At the same time, an unsuccessful adjustment motivates the individuals to either change the organisational characteristics to meet their preferences, adjust themselves to the organisation, or leave the organisation to look for a compatible environment (French & Kahn 1962, Law et al. 1996). The revised PEO model for nursing is presented in Figure 2.5.

Figure 2.5. Conceptual model adopted in this study: Revised PEO model.
The strength of this model is that it views nurses as being in a reciprocal relationship with their environment and occupation. It also highlights that it is nurses’ perceptions of the fit between their professional needs and what they acquire from the health care environment, nursing practice and society at large that affect their occupational performance. This perspective provides an additional dimension to previous nursing studies that tend to see the nurse-environment relationship as a one-way relationship in which the environmental/occupational factors determine nurses’ occupational behaviours. Another strength of the model also lies in the concept of the Nursing Universe. By locating the PEO relationship in nursing within the Nursing Universe, the model allows this thesis to examine how nurses, the health care environment and their occupation are influenced by the expectations of society and professional goals the nursing professional attempts to achieve. It also enables nurse researchers and managers to develop more comprehensive measures to improve the relationship between nurses, the health care environment and nursing by taking these contextual factors into consideration. Finally, a further strength of the model is seen in the concept of the psychological environment that emphasises the uniqueness of individual nurses’ perceptions/interpretations of the fit. This concept underscores how complex individuals’ experience of the fit is and allows researchers to understand their experience more fully by investigating factors which may influence their perceptions/interpretations of the environment. The revised PEO model could offer benefits to the current thesis, which attempted to uncover the impact of the images of nursing held by the public and the nursing profession on nursing practice. The model also allowed for an examination of how nurses perceive the relationship between their practice and professional needs, and how nurses respond to the PEO relationship.

Summary

This chapter has introduced the conceptual model, which was used to guide this thesis. The conceptual model illustrates that nurses’ expectations of their roles and work values must be met by their actual nursing roles and the environmental supplies in order for them to achieve adjustment. This adjustment leads to greater job performance and reduced turnover intention of nurses. The model also shows how nurses, the health care environment and their occupation are positioned within the Nursing Universe and how they are perceived through each individual’s unique
cognitive lens. Hence, the model suggests that the relationship between nurses, the health care environment and their occupation could be influenced by how society and the nursing profession perceive and expect nurses to be, and by how individual nurses perceive and interpret these phenomena. The revised model underscores the multiple dimensions of the person-environment-occupation relationship and the individual uniqueness of that experience. The comprehensive features of this model assisted this thesis to explore the impact of nursing images on nursing practice and how nurses perceive and respond to the PEO relationship.
CHAPTER 3: LITERATURE REVIEW

Introduction

The objectives of this chapter are to review past research in order to identify how the public image of nurses has been studied in comparison with nurses’ self-concept/image, how these images have been related to nursing practice, how nurses perceived the actual form of the nursing practice in comparison with the ideal form of the practice, and how the person-environment-occupation fit/misfit has been studied in conjunction with its effects on nurses’ job performance and turnover intention. In particular, this section will identify gaps in knowledge and critiques methods utilised in past research so as to inform appropriate methods to be considered in this thesis. To achieve these objectives, this chapter does not only review past nursing studies, but also examines literature in other fields such as psychology and organisational studies, which have compiled an enormous knowledge base and research products in the area of person-environment fit study. An exploration of non-nursing literature is important as it informs how the PEO fit has been studied in those fields and how this information can inform this thesis.

The literature review begins with an examination of research concerning the image of nurses/nursing held by society and its possible impact on nursing practice. Then, this chapter explores nurses’ self-concept and its relationships with their ideal nursing roles and environment. Next, nurses’ perceptions of the fit between the actual and ideal nursing practice, and the factors that may influence nurses’ perceptions of the fit are examined. Finally, the relationships between the PEO fit and nurses’ job performance and turnover intention are investigated.

Public image of Nurses - Influence on Nursing Practice

As illustrated in the conceptual model, nursing is intertwined with social structure. It could be suggested that nursing exists because of demands by society for the maintenance and promotion of health. This, in turn, implies that the public’s beliefs and images of nursing/nurses may determine the values of nursing, the way nursing services are utilised and maintained, resources nurses can access, and the degree of power and authority they can exercise.
Consequently, the public image of nurses has drawn considerable attention. Although the present thesis concerns nurses’ perception of their public image (i.e., their subjective interpretation of the public image) rather than how the public actually views nurses, the subsequent section reviews studies, which have investigated the public’s perception of the image of nurses. Such a review provides fundamental information regarding how the nursing stereotyping is reflected through the public image of nurses, how nurses perceive their public image, and how nurses are treated in the health care environment.

The Public’s Perception of the Image of Nurses

Several researchers have investigated the public image of nursing by asking how the public including non-nursing professionals, students and patients saw nursing/nurses or by exploring how nurses’ images have been reflected in the media. The findings of some studies constantly illustrate that the public holds stereotypical image of nurses that emphasises feminine attributes. Other studies reported mixed pictures of nursing images.

For example, Mangum, Garrison, Lind, Thackeray and Wyatt (1991) investigated nurses’ images inherent in different styles of nursing uniform by surveying 100 patients in the medical/surgical area of one US hospital. The results showed nurses in a white dress with a cap, the traditional symbol of Nightingale or the Angel of Mercy, was the image patients held of nurses. Although this study employed a limited sample size, the aggregation of nationally replicated studies also showed that white uniforms (both dress and pants) with a cap, represented patients’ images of nurses (Mangum, Garrison, Ling & Hilton, 1997).

Many other studies that explored the public images of nurses targeted high school students’ perception of nursing. Early studies were carried out with 276 American students from multicultural backgrounds (Reiskin & Haussler, 1994), 347 American high school students (Tomey, Schwier, Marticke & May, 1996), and with a large sample of students in thirty countries/communities (Champion, Austin & Tzeng, 1987). The results of these studies tended to illustrate disappointing images of nurses, which were associated with being unintelligent, dependent, powerless, and underpaid.

While the above studies illuminated persistence of stereotypical public images of nurses, the following studies suggested there have been mixed views or some improvements in the nurses’ images due to upgraded nursing education and increased
public awareness of the importance of the nursing caring role. An early study of Kohler and Edwards (1990) explored 306 American high school students’ perception of nurses in terms of education, working conditions, status and power relationships. Unlike the findings reported by the above studies (Champion et al, 1987; Reiskin & Haussler, 1994; Tomey et al., 1996), which also targeted high school students, the students in their study considered nurses to be intelligent and understood that becoming a nurse required tertiary education. Yet, they saw nursing to be a low status and under paid occupation, and not their preferred career choice. Kohler and Edwards pointed out the underlying reason for not choosing nursing as a career seemed to be inherent in the students’ interpretation of limited return on their educational investment in terms of status and monetary rewards. These findings were also seen in a more recent study involving a large cross-sectional sample of English students (age varied from 10 to 17), which was conducted by Hemsley-Brown and Foskett (1999). The results illustrated the students’ understandings of nursing education requiring university degrees and importance of a caring role. However, the nursing profession was not envied by the students due to the limited authority and career advancement structure available to nursing profession.

In a study conducted by Huffstutler, Stevenson, Mullins, Hackett and Lambert (1998), undergraduate nursing students in a U.S. university were asked to interview non-nursing university students, professionals and others who were not nurses to explore images of nurses/nursing held by them (N = 831). The results showed that nurses were seen as decision-makers, problem-solvers, counsellors and being well-educated on one hand. On the other hand, nurses were still portrayed as caring, sacrificing and noble professionals and being subordinate to physicians, which illustrate traditional nursing images. The most important finding was that the nursing role of caring was still misunderstood as requiring only feminine and angelic characteristics, and any other attributes such as educational preparation to care was overlooked by the public in spite of them regarding nurses as well-educated (Huffstutler et al., 1998). This finding illustrates that nursing education is vaguely understood by the public. Despite the large sample size, the results may lack validity because the data were collected from a convenience sample by the undergraduates who were inexperienced in research.

A more recent study conducted by Powers (2001) suggested the public’s appreciation of nurses’ caring role. By examining US hospital promotional materials
produced as a result of marketing research, Powers argued that public demands and appreciation of nursing care made nurses visible in hospital advertisements. However, the degree of nurses’ visibility was also related to the closeness of their roles to those of physicians and administrators. Nurses seen to be most visible were clinical coordinators, unit managers and advanced practice nurses.

In summary, the public images of nurses appear to have been slowly improving. However, nursing stereotyping that stresses nurses’ subordinate and powerless position is still prevalent in society. The persistence of nursing stereotyping is produced by public opinion influencing the media and media portrayal of nursing reinforcing that stereotyping. Images of nurses as being feminine and subordinate are consistent with a review of contemporary medical dramas in the UK and US media (Hallam, 2000). The review showed that medical doctors were constantly portrayed as being masculine, while other health professionals (often nurses) were projected as being feminine and occupying a low status in the hospital hierarchy. Nurses portrayed by the media were also relegated to the background of the drama by engaging in patient care delegated by medical professionals (Hallam, 2000). Cheek (1995) argues that recent media portrayal of nurses is so sophisticated that it contains some reality, which makes even the fantasised stories look real. Cheek further articulates that once the viewers’ images of nurses have been formed by a fictional nurse portrayed by the media, this image serves as a basis for the viewers to understand other fictional nurses presented in different media.

Despite the fact that many studies have investigated the public image of nurses, most were conducted outside Australia. The public image of nurses in Australia has received less interest from Australian researchers. Nonetheless, there are some studies, which have described the public image of nurses, albeit through limited sample representation. The findings from these Australian studies are presented below to further explore the image of nurses held by the Australian public.

In an audio-tape entitled “the emotive image of nursing” (Bird & Waterkeyn, 1997), on-the-spot street interviews with young Australians revealed that they saw nurses/nursing as “doctor’s assistant”, “not a difficult job”, “all the same”, and “not a career choice”. One respondent described nurses’ roles as “washing toilet bowls”. These interviews might elicit honest responses from the public. However, the
reliability and validity of these interviews, which illuminated a casual and fun-loving atmosphere, are questionable.

Tang et al. (1998, 1999) surveyed 789 Year 11 and 12 Australian students with various ethnic backgrounds in regard to their perceptions of the nursing profession. The results were almost compatible with those of American studies, indicating nurses/nursing being perceived as being powerless, dependent, underpaid and less desirable for their career choice. Tang et al.’s study employed cluster sampling to enhance representativeness of the target population. However, exclusion of Anglo-Saxon students, who makes up the major school age population, limits the applicability of the study findings to the Australian public image of nurses.

A study carried out by Rossiter, Bidewell and Chan (1998) also investigated the nurses’ images with a convenience sample of 162 high school students with various ethnic backgrounds. Although the subjects considered nursing as a more preferred career than medicine, pharmacy and dentistry, more than half the subjects saw nurses as being doctors’ assistants, not using initiative, not being reasonably paid and working in an unattractive profession. Approximately 40% of the students also indicated they considered that nurses obeyed physicians’ orders without questioning. Further reinforcement of these results was provided by an ethnographical study involving 31 ethnic students (Rossiter & Yam, 1998). The results of the study indicated that the students saw nurses in a positive way as being helpful, caring and possessing interpersonal skills acquired through specialised education/training. They also saw nurses as being uncompassionate, lacking status, power and control over their own practice, and doing unpleasant tasks such as dealing with body waste and attending difficult doctors and patients. The studies conducted by Rossiter et al. (1998) and Rossiter and Yam (1998) focussed their research problems on ethnic groups to consider the recruitment of ethnic nurses in order to respond to multicultural social demands. Because the research samples were limited to ethnic students, the results could not be generalised to the entire Australian population.

The stereotypical public image of nursing in Australia also coincides with media portrayal of nurses. Greenwood (1999) maintains that television programmes such as “All Saints” has still been displaying traditional images of nurses as doctors’ handmaidens, self-sacrificing, docile, and sex symbols. Studies which focused on a specific feature of the images of nurses, that is “medical soap” also suggested nurses were the popular targets of romantic literature. In a study exploring the discourse of
romantic medical literature, DeVries, Dunlop, Goopy, Moyle and Sutherland-Lockhart (1995) contended that the scripts were consistently based on a set formula depicting doctors’ masculinity, powerfulness and protecting figure while nurses were often portrayed as being subservient to males, weak and angelic. This set formula was also evident in popular television medical series (Holmes, 1997). These findings indicated two ways of viewing nurses, which were physicians’ power versus nurses’ powerlessness, and physicians as male role models versus nurses as females subservient to males. Nurses as romantic partners of male doctors reflected the public’s tendency to attribute the health care team as a family in which the doctor is the father assuming a patriarchal role and the nurse was the wife/mother fulfilling the doctor’s needs including sexual satisfaction. A nurse was also believed to admire a doctor, who possesses dominant power at the top of a hospital hierarchy. It seems that stereotypical depiction of the image of nurses is still vital in the media and in reinforcing nursing stereotyping in Australia.

The literature highlighted above illustrates the overall public images of nurses, which are persistently characterised as being subservient, powerless, and feminine regardless of the different research locations, various studies approaches and limitations. The literature also indicates that there is little variety in the public images of nurses, such as how nurses in different clinical specialties are perceived differently by the public. This public’s tendency to perceive nurses as all the same is consistent with an attribute of stereotyping, which leads people to see a target group as homogeneous and apply individual characteristics to all other group members (Crawford, Sherman & Hamilton, 2002; Doise, 1998; Worchel & Rothgerber, 1997).

Nurses’ Perception of the Public Image

Despite numerous studies that have been carried out to investigate the public image of nurses, there has been little work exploring how nurses perceive the public image of them. A study involving 180 US oncology nurses reported that they felt a lack of recognition from administrators and physicians (Krebs et al., 1996). A study by Takase, Kershaw and Burt (2001, 2002) involving 80 Australian nurses also showed nurses perceived the public saw them as being less powerful than they thought of themselves. These studies may suggest nurses perceive their public image fairly accurately, which is congruent with psychological research that reported that individuals have quite accurate pictures of how others see them (Cook & Douglas,
1998; Kenny & DePaulo, 1993). Nonetheless, the limited number of studies in this area does not fully explain nurses’ interpretation of their public images.

**The Influence of the Public Image of Nurses on Nursing Practice**

Nurse researchers who are concerned about the public image of nursing often express the consideration that nursing stereotyping influences nursing practice. As has been mentioned, the stereotypical public image of nursing is believed to have oppressed nursing practice by influencing the decisions of policymakers pertaining to the allocation of scarce resources on nursing (Kalisch & Kalisch, 1987), roles of nursing expected by the public (Hughes, as cited in Cunningham, 1999), and doctor-nurse relationship (Corser, 2000). Psychologists argue that stereotypes influence individuals’ expectations of how members of certain groups should behave and be treated (Ashmore & Del Boca, 1981; Haslam, 1997; Snyder, 1981) and produce prejudice against the target groups (Hilton & von Hippel, 1996; Schneider, 2004). This is because individuals are resistant to acting differently from their own beliefs and images of others (Mead, 1925/1968; Street, 1991; Strasen, 1992). In fact, psychological studies have consistently shown that stereotypes associated with ethnicity, gender, and subjective beliefs of an individual influenced one’s judgement and behaviour toward the target (Lott & Saxon, 2002; Macrae, Bodenhausen, Milne & Jetten, 1994; Rudman & Borgida, 1995). Consequently, the public images of nurses as being doctors’ assistants, carers and having a women’s job may lead society to treat nurses according to their stereotyping, and to a refusal of authorising nurses to control their own practice (Conway, 1988; Speedy, 1987). However, these assumptions have rarely been tested empirically. What is missing in this body of literature are the links between the public image of nursing and attitudes toward nurses, and between how nurses see their public image and how they interpret this image affects their practice. While the former link directly suggests nurse researchers’ concern about the effect of nursing stereotyping, it is the latter link, which directly impacts on nurses’ work motivation (French & Kahn, 1962).

Research, which directly asks nurses how they see their public images affecting nursing practice, in particular, the types of roles they are encouraged/discouraged to engage in and the characteristics of the health care environment upholding their roles and professional values, is lacking. However, there are many studies and scholarly comments that attribute the cause of oppressed nursing
practice to low values and power attached to the nursing profession by society. For example, Corser (2000) and Lewis and Urmston (2000) argue that the nurse-physician relationship has been continuously characterised as power asymmetry with physicians having control over nursing practice, which has been supported by the dichotomous ideologies between physicians and nurses held by the public. Nurses and physicians have been characterised as caring vs. curing, feminine (women) vs. masculine (men), and compassionate professionals vs. scientific professions with power and prestige (Corser, 2000; Larson, 1999). Moreover, sex-role stereotyping of women as subservient and unintelligent has provided additional dimensions to the images of nurses.

Davies (1996) and Speedy (2000) articulate that socially supported sex-role stereotyping has been internalised in an organisation, and creates gendering of hierarchy. As a result, many physicians have assumed power and authority over nurses, and have created an oppressed environment in the health care system (Roberts, 1983, 1997). In fact, nursing studies tended to report nurses’ dissatisfaction with decision-making with physicians (Baggs et al., 1997), dominance of physicians in a clinical decision-making process (Coombs & Ersser, 2004), a lack of respect from physicians (Ryan & McKenna, 1994), and insufficient understanding of nursing roles from physicians (Heenan, 1991). Pillitteri and Ackerman (1993) compared residents’ notes in 1888 to those in 1990 to study the doctor-nurse relationship, and reported that there had been little improvement in the relationship over time.

Australian nursing is not exempted from poor doctor-nurse relationships (Nurses still treated like handmaidens, 2002). In a study that explored the power relationship between doctors and nurses during ward rounds in a critical care unit in a Melbourne hospital, Manias and Street (2001) reported that the doctors had control over when nurses could speak and become visible during the ward rounds. The study also reported that the doctors only used nurses’ knowledge of patients so as to accumulate patient data and to make medical decisions. Physicians’ seeing nurses as instruments to gather medical information and control nurses’ contribution to decision-making was also reported by Wicks (1999).

Physicians’ control over nursing practice results in nurses becoming de-skilled labour (Brooker & Eakin, 2001; Herdman, 1998). However, literature indicates that constraint on nursing practice imposed by society is not only limited to nurses’
decision-making role, but also to the caring role of nursing. Although Powers’s (2001) study concluded that society valued nursing care, Jackson and Borbasi (2000) argued that caring was devalued in contemporary health care organisations which were oriented to cost-containment. Jackson and Raftos (1997) also maintain that while organisations exploit language and image of nursing to attract a number of patients, they saw nursing care as a “commodity to be whittled away until it becomes important” (p. 38). Davies (1995) also contends that caring involved such unobservable energy as emotions and commitments, and its outcomes were often undetected. Thus, this uncertainty made it difficult for caring to survive in the health care environment and society, which values scientific evidence and cost-effectiveness (Dingwall & Allen, 2001).

Not only does the stereotypical public image of nurses affect the role of nursing, but it is also assumed to influence the characteristics of the health care environment of nurses. Given that stereotypes held by individuals influence their behaviour toward the stereotyped group (Schneider, 2004; Snyder, 1981), it is plausible to assume that the public image of nurses as subordinates of physicians could lead society to sanction medical authority, and resist endowing the same power to nursing. Consequently, nurses are deprived of their autonomy, independence and power, as it is seen in the asymmetric power relationship between nurses and physicians. A lack of understanding as to the abilities of nurses from physicians, hospital administrators and the public could also result in the current health care system providing limited freedom for nurses to challenge their practice as well as the organisational managerial issues. Moreover, the nursing stereotypes held by the public could overshadow nurses’ contribution to the health care system. In particular, an image of nurses as being feminine (or nursing care as a motherly role) reduces the social evaluation of nursing (Hendricks & Baume, 1997; O’Connor, 1999). As a result, nurses are given little recognition and few rewards for their performance, and are provided with limited career advancement opportunities.

Analyses and implications made by nursing scholars as to the effects of the nursing stereotyping on nursing practice and environment are supported by rich philosophical and theoretical underpinnings, and inform hypothesised links between them. Nevertheless, a lack of empirical validation has little to provide how nurses in practice actually perceive their public images and how these images are influential to
their practice and environment. As has been said, it is nurses’ subjective interpretation of their practice and environment that directly affect nurses, rather than the interpretation offered by others. Therefore, exploring nurses’ perceptions of their public image and its relationship with their practice and environment is essential.

The Nursing Profession and Nurses

Nurses’ Self-Concept

Another concern expressed by nursing scholars that has not been sufficiently challenged is the negative effect of nursing stereotyping on the development of nurses’ self-concept.

According to the humanist psychologist Carl Rogers, self-concept is defined as self-relevant beliefs, images and thoughts that people hold about their own nature, quality and behaviour (Hoffman, Vernoy & Vernoy, 1994). Nurses’ self-concept is, therefore, interpreted as images and beliefs nurses have about their nature and behaviour. Nursing scholars have voiced that the stereotypical public image of nurses lowers nurses’ professional self-concept (Bridges, 1990; Greenwood, 1999; Kalisch & Kalisch, 1986). This is based on a notion that an individual acquires self-image by looking into how others perceive themselves (Cooley, 1902/1968; Harter, 1996; Mead, 1925/1968). Indeed, past psychological research reported a moderate to strong correlation between individuals’ self-image and perceived evaluation from others, whose coefficient values ranged as high as .54 to .81 (Cook & Douglas, 1998; Edwards & Klockars, 1981; Orpen & Bush, 1974). However, a relationship between the perceived public image of nurses and nurses’ self-concept has been rarely tested. Takase, Kershaw and Burt (2002) examined the relationship between the perceived public image of nurses and nurses’ self-concept, and found that there was a mild relationship between them \((r = .54)\). However, a small sample size \((N = 80)\) and possible heterogeneity of the sample characteristics from the entire nursing population (the sample consisted of nurses attending post-registration or post-graduate courses at one university) limited applicability of the findings to other populations. Thus, the negative influence of the public image of nursing on nurses’ self-concept still remains within the realm of assumption.

Another weakness concerning the assumed impact of nursing stereotyping on nurses’ self-concept is failure to consider the effect of professional socialisation in
nursing and individuals’ motivation to preserve a positive self. According to Tajfel and Turner (1986), individuals have an innate drive to preserve a positive self by selectively pursuing positive feedback from others. Alternatively, it is argued that individuals strive to maintain an established self-concept through selective interaction with others and/or attempt to modify others’ opinions of themselves in order to preserve a sense of coherence (Pinel & Swann, 2000; Swann, 1987; Swann & Schroeder, 1995). These psychologists (Pinel & Swann, 2000; Swann, 1987; Swann & Schroeder, 1995; Tajfel & Turner, 1986) suggest that nurses may selectively attend to and internalise professional images of nurses encouraged by the nursing profession and professional role-models, but they may discredit the stereotypical public image of them in order to maintain their professional self-concept, which has been established through the professional socialisation (Brewer & Silver, 2000; Laing, 1993; Ohlen & Segesten, 1998; Turner, Oakes, Haslam & McGarty, 1994). In other words, nurses may be able to develop and maintain professionally oriented self-concept irrespective of how they perceive the public image of them, which intensifies the difference between them. To examine this implication, research on nurses’ self-concept is reviewed.

**Research on Nurses’ Self-Concept**

Nursing research tends to suggest that nurses in general embrace professionally oriented views about themselves, which are acquired through nursing education. In quantitative studies, for example, du Toit’s (1995) Australian study supported that students were exposed to academic culture and professional socialisation wherein they successfully developed a professional identity during formal education. Other studies suggested that in the role of clinical practice, students could enact their skills to reinforce their professional identity (Dunn, Ehrich, Mylonas & Hansford, 2000; Harrington, 1995). While these studies suggested a positive outcome of nursing education that upgraded nursing’s professionalism, others showed that students developed rather over-idealised views of nursing/nurses, which emphasised caring and professional aspects of nursing (Kiger, 1993; Kelly, 1992; Wong & Lee, 2000) and that are later modified to a more realistic view of the nursing profession (Brighid, 1998; Boyle, Popkess-Vawter & Taunton, 1996; Thomka, 2001).

As to experienced registered nurses, Beeken (1997) investigated the self-concept of 195 nurses in one US hospital using a general self-concept scale. The
results showed that 62% of nurses scored their self-concept higher than the mid-point of the scale. Porter and Porter (1991) also measured the self-concept of 363 nurses in one hospital in the USA. The self-concept was measured by a scale especially developed to explore nurses’ self-image in three categories: interpersonal power (power relationships with other professionals), interpersonal relations (skills in interpersonal relationships), and intrapersonal ability (personal characteristics related to professionals). The results revealed that nurses generally had a positive self-image and scores ranged from the average mean of 2.17 for interpersonal relation to 2.52 for interpersonal power (the lower scores indicate more professionally oriented self-concept; the score ranges from 1 to 7). The same study was replicated with an Australian sample of 80 by Takase et al. (2001, 2002), and similar results were obtained. In that study, the scores ranged from 2.43 for interpersonal relations to 3.56 for interpersonal power, which indicated a slightly more negative self-concept than for their US counterparts. However, the results of Takase et al.’s study needs to be cautiously interpreted as it recruited only 80 nurses studying either a post-registration or postgraduate course in one university. Perhaps, Cowin’s (2001) and Murray’s (1997) studies may provide an accurate picture about Australian nurses’ views about themselves. The study by Cowin involved 528 nurses recruited cross-sectionally from clinical settings in New South Wales. Cowin also developed a self-concept scale based on an Australian sample. The findings indicated that both student and experienced nurses rated their self-concept in a highly positive manner. Murray’s study, which involved two groups of 176 Victorian nurses in 1993 and 249 Victorian nurses in 1996, also suggested that nurses saw themselves as caring, flexible, efficient and dynamic problem solvers.

Other studies looked at nurses’ self-concept in terms of values important to their professional attributes. Using an Australian sample of 24 final-year students and 35 registered nurse faculty, Arthur (1992, 1995) also found that the nurses valued creativity, knowledge, leadership, and caring as important characteristics to their profession.

In summary, belonging to nursing and engaging in professional socialisation appear to provide nurses with the particular values, beliefs and qualities inherent in the nursing profession. While these findings support nurses’ embracing a professional self-concept, the effect of the perceived public image of nurses on nurses’ self-concept still remains unclear. This is because studies on the public image of nurses
and nurses’ self-concept have been studied separately and few studies have related these two concepts in nursing. As this issue is relatively unstudied in nursing, psychological research investigating a relationship between individuals’ self-concept and perceived self by others is reviewed so as to provide the implications for this thesis.

Research on a relationship between individuals’ self-concept and perceived self by others

While nursing research provides few answers for the effect of the perceived public image of nurses on nurses’ self-concept, numerous psychological studies have attempted to offer an explanation of the relationship. A study by Eisenstadt and Leippe (1994) revealed that people tended to disregard negative feedback and view positive feedback as more credible information irrespective of how they saw themselves. This suggests that nurses may disregard a negative public image of nurses in order to preserve their professional self-concept. On the other hand, studies by Swann and Hill (1982), Bosson and Swann (1999) and De La Ronde and Swann (1998) showed that people were predisposed to favour and accept feedback, which is congruent with their own self-image, regardless of whether the feedback was positive or negative. These studies suggest that the establishment of professional self-concept plays an important role in buffering the negative impact, which public stereotypes may have on nurses’ self-concept. Moreover, Swann and his colleagues offered evidence that individuals were inclined to change perception of others, which was different from their self-images (Swann & Hill, 1982; De La Ronde & Swann, 1998). The most interesting result was that individuals did not need to be actually convinced that the others had modified their images following the image negotiation. On the contrary, it was the individuals’ behaviours which were directed to convince others that restored their self-views (Swann & Hill, 1982). This suggests that nurses’ effort to modify their negative public image also contributes to the maintenance of their professional self-concept.

The psychological studies seem to imply that the stereotypical public image of nurses is less effectual on the development of nurses’ self-concept. Nevertheless, these studies require a cautious application to real situations due to limitations inherent in the adopted methodology. As is common in psychological studies, the above studies employed an experimental laboratory design, in which participants were
given either positive or negative evaluation on themselves, and their subsequent interpretation of the evaluation and/or their behaviour toward the evaluators were also analysed. While experimental laboratory studies are generally well designed in terms of isolating variables under investigation and manipulating information, Deaux (1992) criticises that they ignore the context wherein self-concept is developed. To begin with, due to the limited time frame in the studies, a long-term effect of self-discrepant feedback (feedback that is different from their self-images) is usually not determined in experimental studies. For instance, giving bogus feedback may induce a temporary reaction in participants, but its long-term effect on their self-concept, as it is a problem in nursing, is doubtful. As Burke and Cast’s (1997) longitudinal study identified, people’s self-concept may change due to the long-term effect of self-discrepant feedback. Hence, a brief period of data collection weakens the claim for validity of the above studies. Second, experimental studies tend to exclude social structure, context and power relationships (Hollander & Howard, 2000). Thus, it is easier for participants to negotiate their self-image with others (Kenny & DePaulo, 1993). This particularly limits the applicability of these study findings to the nursing context, as strong social expectations and power relationships with medical professionals may make it difficult for nurses to negotiate and alter the public image of them. Third, many psychological studies use university students as the study sample, therefore the sample lacks representativeness of an entire population. Finally, manipulation of feedback in experimental studies does not reflect the real world. Kenny and DePaulo (1993) argue that feedback in the real world is provided in a subtle way with multiple sources, and people rarely receive salient feedback as it is given in an experimental study. For these reasons, although psychological studies suggest that nurses’ professional self-concept may be maintained regardless of their perception of a negative public image of nursing, empirical verification of their relationship in nursing is still necessary.

Impact of Professional Self-concept on Nurses Orientations toward their Roles and Work Values

The overall literature suggests that nurses develop a professional self-concept as a result of professional socialisation and their motivation to maintain a positive self. This professional self-concept may influence nurses’ role conception, which is defined as tasks/functions individuals desire or expect to take (Corwin, 1961; Taunton
& Otteman, 1986), and work value system, which is referred to as “the end states people desire and feel they ought to be able to realise through working” (Nord et al, 1990, p. 21). This is because what individuals think they are may be translated into how they should act and what they deserve. The PEO model also suggests that the person is a holistic entity, whose mind, body and spirit are interdependent (Law et al., 1996). Thus, the professional self-concept of nurses may inspire nurses to pursue roles and work values inherent in the nursing profession within their environment. As this study aims to examine the relationship between the image of nursing and the person-environment-occupation relationship, it is essential to explore how nurses’ self-concept is related to their expectations toward their roles and environment.

There are some studies, which have investigated nurses’ role conception and work values. For instance, Taylor, Westcott and Bartlett (2001) conducted a 1-year follow-up study to investigate the role conception of 52 degree and 28 diploma graduate nurses in the UK, and reported that these nurses rated highly on-going professional development and patient care services as their responsibilities. Similar results were also reported by a 1-year follow-up study conducted on 180 US degree graduates (Ahmadi, Speedling & Kuhn-Weissman, 1987). Regarding decision-making, a study that surveyed 336 staff nurses and 130 head nurses in the USA revealed that nurses desired to make decisions for patient care and for unit operation in the areas of in-service programmes and implementation of new ideas (Blegen et al., 1993). While these findings illustrate nurses’ desire to engage in patient care and decision-making roles that are defined as nursing’s professional roles, the validity of some findings is questionable. This is because the scale used in the first two studies was found to have low validity and reliability (Merritt, 1997; Taylor et al.) and the reliability and validity of the last study was not reported.

As to nurses’ work values, Fagermoen (1997) asked 731 nurses about the values underlying their professional identity, and identified two categories of professional values, which were “other oriented” and “self-oriented values”. While the “other oriented” values were concerned with patients’ centred care, it was the “self-oriented” values that expressed nurses’ work values and needs they sought from their work environment. These “other oriented” values included independence, intellectual stimulation, personal stimulation, creativity, achievement, interpersonal relations, leadership, reward structure, and recognition of nursing as a profession.
A study by Prothero, Marshall, Fosbinder and Hendrix (2000) also surveyed the work values of 49 nurses in two US hospitals, and identified their relationship with job satisfaction. In their study, highly ranked nurses’ values involved a sense of accomplishment, equality, self-respect, self-control and values pertaining to personal attributes such as being honest and helpful. The study also suggested that nurses who valued a sense of accomplishment and equity might be more satisfied with increased responsibility for decision-making, governance and autonomous practice. However, convenience sampling and the small sample size resulted in limitations of the sample representativeness, which subsequently led to low applicability of the findings.

Lawrence, Wearing and Dodds (1996) surveyed 405 nurses in two suburban teaching hospitals in Melbourne in an attempt to illustrate positive and negative environmental features identified by the nurses, termed as “work space”. According to their Nursing Work Space Model, recognition was identified as the core value making up the positive environmental features. Furthermore, a sense of self-respect was achieved only when nurses were satisfied with an equal relationship with other health care providers and when they felt there was recognition for nursing. Another dimension of the positive work space included career advancement opportunity that also tied with recognition for nursing. The model illustrated that recognition, equal relationship with other health care professionals and career advancement opportunity were important values for nurses to remain in the profession.

The studies highlighted above (Blegen et al., 1993; Taylor et al., 2001) suggested that nurses value and seek such professional roles as decision-making and quality of patient care. The studies (Fagermoen, 1997; Lawrence et al., 1996; Prothero et al., 2000) also showed that nurses pursue such work values as recognition, autonomy (independence and self-control), sense of achievement, equality (equal relationships with other health care professionals) and reward, which are essential requirements for a profession (Pavalko, 1971), in their work environment. These findings suggested that nurses have high expectations of their nursing roles. At the same time, they embrace professional values.

Nonetheless, few investigators directly tested the links between nurses’ self-concept, role conception and work values. As an exception, Joseph (1985) investigated the relationship between nurses’ self-concept and their role orientation. The results suggested that nurses with a masculine self-concept (i.e., nurses seeing themselves as being dominant, assertive and competent) were more inclined to
assume decision-making to be their important role, while those with a feminine self-concept (i.e., nurses seeing themselves as being feminine, motherly and helpers to physicians) were not inclined to do so. The regression analysis showed a significant increase in $R^2$ when scores on decision-making were regressed on those of self-concept. However, the small sample size ($N = 85$) provides less credit for the generalisability of the study findings. In addition, the accuracy of the analysis may be reduced due to the small sample size, as it leads to overestimation of $R^2$ in regression analysis (the adjusted $R^2$ was not reported in that study) (Tabachnick & Fidell, 2001). Therefore, a study with a larger sample size is necessary to identify the relationships between them.

The PEO Fit in Nursing

Although the literature review has revealed a number of gaps in the study of the images of nurses and how these images affect nursing practice, the literature seems to suggest that nurses internalise professional self-concept through professional socialisation, and their self-concept may be linked with nurses’ professional role conception and work values. On the other hand, the literature suggests that the stereotypical public image of nurses may constrain roles and values of nurses as if nurses were still subservient to medical professionals. In other words, the discrepancy in the images of nursing held between nurses and society may further contribute to the existence of discrepancies between roles and values nurses aspired to and roles and values nurses are actually assigned in their practice. These three types of discrepancies (i.e., image, role and value-supply misfits) characterise the PEO misfit in nursing that is referred to as nurses’ perceived incompatibility or discomfort with occupational roles and with their environment (Mitchell et al, 2001). As the literature regarding the image of nursing held between nurses and society has been already presented, this section explores how the PEO fit/misfit in nursing roles and work values has been studied in nursing.

Research on Nursing Role Misfit

A number of studies have focused on the roles of nursing, many of which are concerned with role overload (that is, too much is expected of their role within a limited time (Hardy & Hardy, 1988)), role conflict (that is, incompatible role expectations from others (Hardy & Hardy, 1988), which often contributes to ethical
dilemma) and role ambiguity (that is attributed to vagueness and lack of clarity in role expectation (Hardy & Hardy, 1988)). However, fewer studies have investigated role misfit, which is defined as incongruence between one’s desired/idealised roles (that is, role conception) and actual roles assigned by an organisation (Corwin, 1961), despite the fact that this is an important and recurrent issue negatively affecting nursing. A description and critique of studies that have investigated the role misfit in nursing follows.

Yung (1996) investigated the impact of professional socialisation on the role conceptions of 81 Hong Kong nursing students in a degree programme and 140 students in a certificate programme respectively. The instrument used was a modified version of Corwin’s Role Conception Scale. The original Corwin (1961) Scale was developed to measure professional, bureaucratic and service roles of nursing and widely adopted to examine role misfit in nursing studies. The professional role conception subscale of the Corwin Scale measures characteristics such as upholding professional standards and knowledge, judgement ability and power to make suggestions, while the bureaucratic subscale evaluates loyalty to hospital bureaucracy. The service role conception subscale assesses patient-oriented attitudes such as humanity, and preference to patient-oriented care and bedside nursing (Corwin, 1961). The validity of the modified scale used in Yung’s study was established by a panel of experts who content-verified the scale items. The reliability of the subscale (Cronbach’s alpha) ranged from .84 in the professional role conception subscale to .58 in the patient service subscale. Results revealed that the degree students possessed a significantly higher professional role conception than the certificate nurses, due to more opportunities to socialise in an academic environment. With reference to role misfit, the degree nurses reported significantly greater ideal-actual role discrepancies in all three roles. While these results impinge on the incompatibility between the roles of nursing inspired in university education and those actually carried out by staff nurses, a low reliability in the patient service subscale lessens the validity of the findings.

The following studies investigated the role conception of staff nurses using the original Corwin Scale. Ahmadi, Speedling and Kuhn-Weissman (1987) followed up changes in the role conception of 83 new graduate nurses over 1 year (initial survey involved 180 nurses, but 97 nurses terminated employment during the study) in the USA. The results showed that discrepancy in the professional role dimension
increased in 1 year’s time, indicating that the graduate nurses perceived themselves engaging in fewer professional responsibilities to maintain their standards than they desired. On the other hand, the increase in the discrepancy in the bureaucratic role suggested that they were conducting more bureaucratic type roles including following hospital routine, record-keeping and conforming to the authority of the hospital and doctors than they desired.

A more recent study also reported comparable results. Taylor et al. (2001) followed up newly graduated degree nurses (n = 81) and diploma nurses (n = 41) on graduation, at 6 months and at 1 year after graduation (only 35 degree graduates and 21 diploma graduates participated in all the three studies). The instrument administered was the original Corwin’s Scale, which was reworded for use in the UK sample. The findings showed that degree nurses’ conception of the professional roles decreased progressively, while the ideal view of the service role increased over the year. In contrast to the degree graduates, the certificate nurses appeared to show more subtle adjustment to clinical practice, although there were some fluctuations in their role conceptions. Regarding the role misfit, both groups of nurses reported discrepancies in the bureaucratic, professional and service roles. Although the discrepancy in the bureaucratic role was small, this is the only role the nurses rated that they had more engagement with in reality than in the ideal. The largest discrepancy was observed in the service role conception, suggesting that they had significantly fewer opportunities to engage in patients’ care than they desired. These findings highlighted the presence of the role misfit in nursing roles. However, the small sample size over the entire time course limited generalisability of the findings.

The above studies (Ahmadi et al., 1987; Taylor et al., 2001; Yung, 1996) illustrated the discrepancy between nurses’ role conception and actual roles they engaged in at work, and implied that their roles were constrained by a hospital maintaining nurses’ dependent position. Nevertheless, the findings need careful interpretation. Despite the wide adoption of the Corwin’s scale in nursing research, recent research has raised concerns regarding its reliability and validity. In a study by Merritt (1997), results showed that the reliability of both the ideal and actual role conceptions in all three professional, bureaucratic and patient service role subcategories were low, ranging from .52 to .58 and from .24 to .35 respectively. Moreover, the exploratory factor analysis and discriminant function analysis have revealed no support for the construct validity of the scale. These results were
reinforced by Taylor et al. (2001). In their study, they also claimed low reliability of the scale in all the subscales (i.e., .16 for the bureaucratic subscale, .40 for the professional subscale, and .64 for the service subscale). The Corwin scale of nursing role conception may not reflect contemporary nursing roles as it was developed more than 40 years ago. The results suggest that the scale requires revision in accordance with recent nursing advancements made in education, professionalisation and working conditions (Taylor et al, 2001). Unless the scale is modified and revalidated, data obtained by using the original Corwin’s scale requires cautious interpretation.

Because of the low reliability and validity of the Corwin’s scale, studies which adopted other measurements were also reviewed. However, there were very few such studies. Mitchell (1994) asked 201 US nurses to rank seven work roles according to how much they valued them and the amount of time actually spent performing each of those roles during the course of a normal shift. The seven work roles were based on Benner’s classification system of nursing roles, which include helping, teaching, monitoring and making diagnosis, managing rapid changes, therapeutic intervention, quality of care, and organisational/work role competencies. To investigate role misfit perceived by nurses, a Spearman rank order correlation was calculated. The findings showed that 50% of the sample fell into a small range of positive correlation (between .7-1.0), suggesting that the majority of nurses recognised only a small amount of role misfit. However, a careful examination is required to interpret this data.

This caution is attributable to the instrument used to measure role misfit. Mitchell (1994) adopted Benner’s classification system to assess desired and actual nursing roles. This classification includes the professional roles nurses should be performing, but excludes unpleasant tasks such as the bureaucratic roles which other studies have shown that nurses spend a large portion of their time conducting. Hence, the findings may not reflect the actual state of role misfit. Furthermore, the study did not report the reliability of the instrument, therefore the accuracy of the results is questionable. In addition, Spearman rank order correlational products did not show actual differences between the desired and actual role taking, but indicated only the degree of congruence in the ranking. For these reasons, it is difficult to accept the findings showing that there was little role misfit perceived by participants.

Boyle et al. (1996) adopted the Staff Nurse Role Conception Inventory developed by Taunton (1984) to compare the role conception of 40 new graduates with that of 84 experienced nurses. The results showed that new graduates had a
higher expectation in maintaining their professional standards than the experienced nurses, whereas the experienced nurses reported a higher expectation in engaging in direct patient care than their counterparts. However, the aim of the study was not to identify the role misfit, thus no data were available regarding the discrepancy.

Bourgeois (1991) showed that there was general agreement in the conception of what comprised ideal and actual roles between 300 selected staff nurses and a small number of nurse administrator/managers in the USA. The investigator also reported that both groups of nurses recognised a significant role misfit within both the bureaucratic and professional roles. The instrument used to measure the role misfit was developed by the author and its validity and reliability were not detailed.

Blegen et al. (1993) also tested desired and actual levels of nurses’ participation in decision-making in areas of patient care and unit operation with a self-developed scale (N = 486 US nurses). According to the findings, these nurses perceived they engaged in decision-making in patient care more than they desired, while they reported less involvement in unit operation policy-making than desired. However, evidence of the reliability and validity of the scale was not reported, which reduces the rigor of the study findings.

Whereas many studies investigated nurses’ role conception and role misfit, O’Donnell’s (1996) descriptive work provides another dimension of role misfit, that is, skill under-utilisation. Her study looked at the degree of nurses’ stress in 16 areas (including skill under-utilisation) using a cross-sectional sample in the UK. The results showed that the nurses were stressed due to skill under-utilisation and a lack of opportunities to participate in the decision-making process.

The literature review has revealed that role misfit or skill under-utilisation exists in the role of nursing. However, this topic has not received a great deal of attention, especially in Australia. Moreover, the use of unreliable scales may have reduced the accuracy of the findings of a number of studies. In addition, few investigators have linked role misfit and image misfit of nurses.

**Research on Nursing Value-Supply Misfit**

The other dimension of the PEO fit to be explored in this thesis is congruence between work values of nurses and environmental ability to reinforce them. According to Furnham (1988, p. 613), values are defined as “motives that involve normative consideration of ‘oughtness’ and desirability”. Work values can be, in this
sense, defined as employees’ desire to receive intrinsic and extrinsic environmental rewards (e.g., autonomy, career opportunities, and pay) in the exchange of or to perform their tasks (Nord et al, 1990). To achieve congruence, a set of desires expressed by nurses must be reinforced by conditions supplied by the organisational environment.

The characteristics of the environment that reinforce nurses’ work values (i.e., environmental supplies) can be determined by the values organisations attach to nursing. These values can be, in turn, influenced by social beliefs/images of nursing/nurses. This may imply the link between the image misfit and value-supply misfit. To investigate whether or not the value-supply misfit exists in nursing, the following section explores nursing studies, which have investigated nurses’ perceptions of their work environment and the congruence between nurses’ work values and actual environmental supplies.

Studies that compare nurses’ work values and actual environment supplies they receive are even scarcer when compared with those examining nursing role misfits. Many nursing studies, in fact, have tended to explore either nurses’ work values as reported earlier or environmental factors. For instance, many studies have analysed work environment characteristics in mental health nursing in the UK (Dallender, Nolan, Soaros, Thompson & Arnetz, 1999), in a medical-surgical unit in Canada (Sandhu, Kérouac & Duquette, 1992), and on nursing development units (NDU) in the UK (Avallone & Gibbon, 1998). Other studies compared the perceived work environment between nursing staff and auxiliary staff with different nursing styles in the UK (Thomas, 1992), between midwives and nursing staff in the UK (Carlisle, Baker, Riley & Dewey, 1993), between UK and US nurses (Baker, Carlisle, Riley, Tapper & Dewey, 1992), and between general nurses and mental health nurses in the Netherlands (Tummers, Janssen, Landeweerd & Houkes, 2001). As each organisation or ward possesses unique characteristics in their work environment, the findings showed that the perception of work environment was context dependent. Nurses working in primary nursing wards (Thomas, 1992) and the NDU staff (Avallone & Gibbon, 1998) rated the amount of autonomy they received well above the mid-point of standardised scores. On the other hand, the US and the UK nurses in Baker et al.’s work (1992), the midwives in Carlisle et al.’s study (1993), nurses in Sandhu et al.’s work (1992), and general and mental health nurses in Tummers et al.’s study (2001) reported they received a low to middle level of autonomy. In general,
interaction with colleagues was rated as satisfactory. Work pressure and perceived control by nurse managers tended to be mild to low except for mental health nurses in a study by Dallender et al. (1999), who reported their work was often psychologically taxing.

The findings of these studies may be meaningless, unless nurses’ needs are compared against environmental supplies. Studies, which examine only environmental factors, may assume that all people value the same environmental characteristics in the same ways and to the same intensity. Thus, the studies seem to presume that investigating environmental characteristics could explain how much employees are satisfied with environmental supplies. This assumption appears to be blindly accepted by many nursing investigators. However, this conventional method/assumption ignores a difference in individuals’ needs and values, and how they interpret the environment supplies in the context of their work values. In contrast, investigating the person-environment fit takes individual’s needs/values into consideration, and emphasises that it is a value/need difference, which is unique to each individual, producing different responses to the same environmental characteristics. For example, reporting nurses having a moderate amount of autonomy does not necessarily mean that nurses are relatively satisfied with their autonomous practice. Nurses may be seeking a level of autonomy similar to that possessed by physicians. In that case, a moderate level of autonomy indicates the value-supply misfit.

While most studies have looked at nurses’ perceptions of their work environmental characteristics or satisfaction with them, few studies have directly investigated relationships between value-supply fit and other variables, for example, burnout (VanYperen, 1998). Of them, some studies did not report results of the descriptive statistics, which makes it difficult to determine the degree of congruence. However, one old study investigated various dimensions of the values held by nurses and actual supplies they received (Oechsle & Landry, 1987). By targeting 226 US new employees, the investigators asked nurses to compare their expectations of their work environment with actual experience in that environment, which were classified into three categories (lack of supplies, congruent, and over-supplies). The study showed that the new employees felt their expectations toward a good interpersonal relationship, use of nursing skills and judgement, and the amount of responsibility assigned were reinforced. On the other hand, such expectations as recognition and
career advancement were not fulfilled. Although this study encompassed many
dimensions of value-supply fit, classifying nurses’ responses into only three
categories obscures the magnitude of value-supply fit. Targeting new employees in
one hospital also made it difficult to apply the findings of the study to other
situations. On these grounds, it could be stated that more comprehensive studies are
necessary to explore the degree of value-supply fit.

In an effort to identify the degree of value-supply fit in nursing, studies which
investigated nurses’ satisfaction with their environmental supplies is reviewed. It
should be noted, nevertheless, that job satisfaction is the outcome of the value-supply
fit in the person-environment fit perspective (Dawis & Lofquist, 1984; Walsh &
Holland, 1992). Hence, the degree of job satisfaction cannot inform how strongly
nurses desire to have certain work values and how much environmental supplies they
receive. With this caution kept in mind, the following section introduces research
findings upon nurses’ job satisfaction.

Adamson, Kenny and Wilson-Barnett (1995) investigated 108 UK and 133
Australian nurses’ levels of job satisfaction and perceptions of medical dominance.
The results showed that both groups of nurses perceived themselves to be more
dissatisfied with their medical counterparts in the areas of pay, status, relationship
with hospital administrators, and working conditions. Australian nurses were more
dissatisfied with their job than the UK nurses. On the other hand, UK nurses tended to
see physicians as more autonomous and authoritarian than Australian nurses did.

Inequity between nurses and physicians was also observed in a study by Baggs
et al (1997). In this study, the relationship between physician-nurse collaboration and
satisfaction with the decision-making process was investigated in three US hospitals.
The results revealed that nurses reported more significant dissatisfaction with the
decision-making process than the physicians reported.

As noted repeatedly, nursing stereotypes may have oppressed nurses’
opportunities to utilise their skills, including decision-making skills. Not only have
nursing stereotypes affected nurses’ images and roles, but they may also influence
what nurses can receive from their environment. Hendricks and Baume (1997)
maintain that insufficient understanding as to nurses’ role and ability by society
makes it difficult for nurses to compete for a market price for caring. A failure to
compete in the economic market, therefore, results in reducing nursing’s values in an
organisation. Nursing’s values also succumb to gender stereotypes. Brooker and
Eakin (2001) argue that gender stereotypes tend to constrain women as a low class group, and this class awareness determines amounts of autonomy, control, and recognition to be allocated to members of each class. Socially advantaged groups such as men, hence, enjoy a high level of power and autonomy, whereas women and nurses suffer from their low social status.

Inadequate organisational support for nurses’ autonomous practice was reflected in a study conducted by Collins and Henderson (1991). Their study findings suggested that the majority of the US participants \(N = 208\) felt a need to practice autonomously. Nevertheless, they felt little support for such practice from their environment such as nursing administrators and physicians. Moreover, the study indicates that perceived level of autonomy has not changed since Pankratz and Pankratz carried out their original study in 1974. Similar results were obtained in Fung-Kam’s study (1997), which reported that nurses’ dissatisfaction with the level of their autonomy \(N = 190\) (Hong Kong nurses), and by Australian studies (Finn, 2001; Takase et al, 2001, 2002), which reported only a mild satisfaction with it (the mean scores were 4.64 \(N = 178\) and 4.93 \(N = 80\) in a possible rage of 1 to 7 with higher scores indicating satisfaction, respectively to Finn’s and Takase et al.’s studies).

The low value attached to the nursing profession was also evident in the monetary reward structure and a lack of career advancement. Studies by Fung-Kam (1997), Tzeng (2002a) and by Takase et al. (2001, 2002) reported that nurses were strongly dissatisfied with their pay despite the fact that they highly valued receiving a fair salary. O’Donnell (1996) also reported that nurses are stressed with work overload to a high degree, and career uncertainty to a medium degree.

The studies on nurses’ job satisfaction suggest that nurses are not satisfied with their work environment in terms of the amount of autonomy/authority given, equality with other health professionals, control over their workload, and pay. Satisfaction involves nurses’ feelings and evaluation of their environment. Given that nurses attach significant importance to recognition, autonomy and respect from others (Fagermoen, 1997; Lawrence et al., 1996; Prothero et al., 2000), it is understandable that they are no longer satisfied with a low to medium amount of supplies they receive from the environment. Yet, it should be re-stated that the degree of satisfaction clarifies neither the amount of values nurses attach to each of
environmental characteristics nor the amount of actual supplies from the environment.

In summary, the literature suggests that there may be a value-supply misfit in nursing. But an extensive search of the literature also indicates that there have been few studies conducted on this issue. The limited number of studies on the value-supply fit obscures to what extent nurses attach importance to each value and to what degree those values are reinforced by their environment.

*Influential Factors on the Perception/Interpretation of the PEO Fit*

Apart from a lack of nursing studies on the PEO fit, the weakness of previous nursing studies is also evident by a lack of investigation on nurses’ subjective perceptions and interpretation of the PEO fit in nursing. More specifically, past research presented only the overall picture or implication of the PEO fit in nursing, but did not explore how individual nurses uniquely perceive and interpret fit between themselves and their environment/occupation.

The psychological research suggests that individuals have fairly accurate perceptions of how others see them (Cook & Douglas, 1998; Kenny & DePaulo, 1993). However, the literature also suggests that each individual perceives and interprets environmental events slightly differently in accordance with his/her self-concept (Boeree, 1997; Cantor, 1990; Kelly, 1991; Kenny, 1984, Markus & Nurius, 1986; Markus & Wurf, 1987; Ruvolo & Markus, 1992; Scheer, 1996; Stein, 1995), self-motivation (Rosenberg, 1967/1968; Kirchenbaum & Henderson, 1989), cognitive processes/framework developed through social experience (Wicker, 1992; Wicker & August, 2000) and cultural values they embrace (Schein, 1990). The following section examines the effects of individuals’ self-esteem, experience, and clinical cultures on their perceptions and interpretation of the PEO relationship.

*Moderating Effect of Self-Esteem*

Self-esteem is defined as a ratio of one’s success over pretensions (James, 1910/1968), or personal judgement of individual worthiness (Coopersmith, 1981). Psychologists (Swanns, 1987; Tajfel & Turner, 1986) maintain that people are motivated to seek a positive or self-confirming feedback about themselves when developing their self-images. Psychological literature also suggests that a degree of self-esteem influences perceptions of self and evaluation of self from others (Ervin &
Stryker, 2001; Rosenberg & Owens, 2001). For example, individuals with high self-esteem are said to be more motivated to seek positive information on selves in order to enhance their self-concept (a tendency for self-enhancement). This motivation sometimes results in individuals manipulating their perceptions and interpretations of information in a favourable fashion (i.e., distorting a negative feedback into a positive one or ignoring a negative feedback to enhance self-concept). In contrast, people with a low self-esteem tend to prefer information that is consistent with their self-image. Therefore, these people are more motivated to protect their self-image rather than enhancing it (i.e., by accepting feedback that is congruent with their self-image: a tendency for self-protection) (Baumeister, 1993; Campbell & Lavallee, 1993; Rosenberg & Owens, 2001; Spencer, Josephs & Steele, 1993; Swann, 1987). The effect of self-esteem is well studied in psychological research. A classical study by Cohen (1959/1968) showed that individuals with high self-esteem tended to deny or ignore negative evaluations from others more than those low in self-esteem did. More recently, Britt et al. (1997) studied the role of self-esteem on trait feedback that threatened one’s self-concept. The results indicated that participants ($N = 214$) with high self-esteem tended to evaluate themselves positively regardless of negative false feedback on their traits. On the other hand, participants with low self-esteem were more prone to negative feedback. This suggested that persons with high self-esteem were more likely to ignore negative feedback in a self-serving manner, while those with low self-esteem could afford such practice to a lesser degree.

Bosson and Swann (1999) looked at specific aspects of self-esteem, which included self-liking (feeling of self-worth) and self-competence (feeling of competence) ($N = 74$). Regression analysis revealed that people with a high score in self-liking tended to see positive feedback on self as more accurate than those with a low score. People with a high score in self-liking also saw negative feedback as not accurately reflecting themselves. On the other hand, people high in self-competence evaluated only positive feedback on their competency as accurate. The results also showed that individuals tended to credit feedback they thought of as being accurate. These findings suggested that individuals with a high self-esteem were inclined to judge favourable feedback to be a more accurate evaluation of self and use that feedback for developing positive self-views. On the other hand, they dismissed unfavourable feedback as being inaccurate and showed less interest in that
information. While this study illustrated the function of self-esteem well, the validity of the results was limited due to the small sample size.

Previously, it was suggested that nurses can perceive the public image of them quite accurately (see the section under the heading of *Nurses’ Perception of the Public Image*). Thus, the stereotypical public image of nursing may lead to an image misfit between their self-concept and their perception of the public image. However, the literature on self-esteem suggests that people’s perceptions can be influenced by motivation to maintain or enhance their self-concept. High collective self-esteem people are found to have high motivation to enhance their self-concept by selectively seeking positive feedback from others or distorting negative feedback. Thus, their motivation would result in affecting their perception of how others see them in a favourable fashion. This perception manipulation might lead individuals with high self-esteem to experience a better image fit than those with low self-esteem.

The moderating effect of high self-esteem is not only evident in perceptions and interpretations of feedback on self, but also in appraising environmental characteristics. Mossholder, Bedeian and Armenakis (1981) and Brockner (1988) argue that individuals with high self-esteem are self-confident and may be able to ward off negative environmental cues, while those with low self-esteem are uncertain about themselves and tend to rely on environmental feedback, which makes them more susceptible to negative environmental stressors. Mruk (1995) also maintains that people with high self-esteem are protected with feelings of self-worthiness that functions as a shield against negative environmental cues. The stress buffering effect of high self-esteem is evident in many studies (Carson, Fagin, Brown, Leary & Bartlett, 1997; Pruessner, Hellhammer & Kirschbaum, 1999; Rector & Roger, 1997). These may suggest that nurses with high self-esteem may be able to ward off negative environmental cues and tend to perceive their roles and environment favourably in accordance with their role conception and work values.

Although a number of psychological studies have been carried out to investigate the moderating role of self-esteem on perception and interpretation of events, many of them adopted experimental designs, whose weaknesses have been discussed previously. Moreover, all the studies reviewed chose personal self-esteem that is developed through a personal judgement of individual worthiness (Coopersmith, 1981) as a study variable. Therefore, the results of these studies may be
less applicable to the proposed thesis, which targets nurses as professional group members rather than as personal selves. For this reason, the effect of a group-based self-esteem (termed collective self-esteem, which is referred to as people’s evaluation of their values placed on their social group membership (Luftanen & Crocker, 1992)) is considered to serve a more appropriate moderator on nurses’ perception and interpretation of the fit in this thesis. According to Crocker and Luhtanen’s work (1990), collective self-esteem also has a moderating effect on threatening feedback ($N = 85$, experimental design/ANOVA was used). However, few studies have been conducted to investigate the impact of collective self-esteem on the perception of the PEO fit. Hence, such effect needs to be further scrutinised.

**Moderating Effect of Experience**

The moderating effect of experience on the development of nurses’ self-concept, role conception and work values has been relatively unstudied, as many of the nursing studies examined above have tended to focus on the early stages of professional socialisation. As discussed, nurses’ professional self-concept may be preserved irrespective of how they perceive their public image. Maintenance of self-concept can benefit from conscious or unconscious manipulation of individual’s perception and interpretation of their environment (Pinel & Swann, 2000; Swann, 1987; Swann & Schroeder, 1995; Tajfel & Turner, 1986). However, Swann (1987) also maintains that people’s self-concept may change if they are constantly reinforced with discrepant feedback regarding self for a long period of time.

A review of the literature of the public image of nurses has illustrated that nursing stereotyping in society is a perpetuating phenomenon, which may have helped to sustain an oppressive environment in nursing. This indicates that nurses are placed under a position wherein constant self-discrepant feedback from the public is given. This constant feedback and nurses’ feeling of uncontrollability to alter their public image may lead to a state of learned helplessness in which nurses come to be depressed and passively accept what society believes about them (Peterson, Maier & Seligman, 1993). In support of this assumption, Takase (2000) reported that nurses’ professional self-concept slightly lessened as they had longer clinical experience. However, the differences among the means were not statistically significant, which might be attributed to the small sample size ($N = 80$).
The same assumption may be applicable to the development of nurses’ role conception. For example, Joseph (1985) found that more experienced nurses declined to engage in decision-making (the years of experience explained 8% shared variance with the attitude toward decision-making in a stepwise regression analysis) because they had learned that challenging physicians’ decisions was painful. However, the small sample size \(N = 85\) involved in this study reduces the validity of the result due to the limited sample representativeness and a possible inflated \(R^2\) (Tabachnick & Fidell, 2001). Blegen et al. (1993) also reported that nurses with 1 to 5 years of experience desired independence in patient care and advocacy, while nurses with more than 15 years of experience and aged over 50 preferred to leave or share decisions with others (the total sample size was 486). However, the reliability and validity of the instruments used in Blegen’s study are unknown.

The above studies (Blegen et al., 1993; Joseoh, 1985; Takase, 2000) suggest that a longer clinical experience leads nurses to adjusting their self-image and role conception to their environment and occupation, hence resulting in nurses experiencing a greater PEO fit. As to work values, few studies have been conducted to investigate this assumption in nursing. Nevertheless, a study in psychology has shown that there may be a relationship between them. Using teaching professionals as a study sample, Ostroff and Rothausen (1997) reported that people \(N = 597\) with a longer tenure tended to perceive a greater fit between personal values and environmental supplies. However, the weakness of this study is that it did not investigate how the fit occurred as a result of a longer tenure. In other words, it is not clear whether or not the fit was achieved by employees’ adjusting themselves to their environment, or vice versa. On the other hand, a longitudinal study conducted by Johnson (2001a, 2001b) illustrated that employees changed their work values in accordance with how they perceived the environmental supplies \(N = 2373\).

Working in an environment that provides discrepant feedback from one’s own preferences/needs is stressful. If the stress is overwhelming to individuals, they may determine to leave a job or organisation in order to avoid grievance (Ostroff & Rothausen, 1997). If individuals are to stay in the job or organisation, either changing selves or the organisation may be necessary in order to achieve adjustment. The above findings (Johnson, 2001a, 2001b) suggest nurses may modify themselves to the environment rather than change environments. This is understandable, given that changing social opinions and treatments toward nursing require considerable energy.
and time. Nurses have won some improvements in their status and working conditions by engaging in collective actions (McCoppin & Gardner, 1994). However, changing the environment may be difficult in everyday practice.

Therefore, for nurses with a longer length of clinical experience, adjusting themselves to the existing states of the environment and occupational roles may be the ultimate solution to staying in the profession. This adjustment reduces the perception of a misfit between the self, the environment and the occupation, and may lead to better coping with the present nursing practice. On the other hand, nurses with shorter experience may be suffering from a greater misfit when maintaining a positive self-concept. The above nursing studies (Blegen et al., 1993; Joseoh, 1985) have indicated nurses’ role conception changes according to the length of clinical experience, but did not investigate changes in the perception of the PEO fit. Hence, more empirical studies are required.

**Moderating Effect of Clinical Cultures**

The last intervening variable on perception and interpretation of the PEO fit is the clinical culture or values inherent in each clinical culture. Each person internalises values inherent in a specific culture, which guide their perceptions, judgement and behaviour to live in that culture (Nord et al., 1990; Rokeach, 1979; Schein, 1990). Violating cultural values is painful, as it infringes the norms of a culture a person belongs to as well as his/her own personal values. Accordingly, people attempt to preserve their values by selectively attending to specific events or interpreting events in a way that reinforces their values. Their attention is also directed to evaluate if their values are reinforced by environment. Here, an intervening effect of nurses’ clinical culture is examined. This is because each unit or speciality has a specific clinical orientation, which encourages certain values to be internalised, and discourages others. For example, autonomous or independent practice may be encouraged in some specialties but not others. Each clinical area/speciality adopts or develops certain clinical culture inherent in the types of job required. Having internalised specific clinical culture, nurses’ attention and interpretation of environmental events may be influenced by values prescribed by that culture.

For example, Vandenberghe (1999) showed that different clinical areas have developed different types of clinical culture and values. The study showed that different organisations ($N = 19$), professional groups ($N = 565$), and units in Belgium
had different types of clinical culture that reinforced certain values. Moreover, fit between nurses’ \( (n = 433) \) preference for certain culture/values and perceptions of actual clinical culture differed significantly between organisations.

More specifically, Philpin (1999), who explored the socialisation process of 18 UK neophytes through a semi-structured interview, reported that different clinical norms, cultures and values in acute care and chronic care areas. For example, experienced nurses in acute care areas were oriented more to nursing skills/techniques and medical models, whereas those in chronic care areas valued caring, communication and the ethical dimensions of patient care. In addition, clinical climates were also different between these two areas. In the acute care areas, medical dominance was observed. In the chronic care areas, autonomy from medical professionals and not being afraid to speak out as an advocate of patients were encouraged. The medically oriented clinical culture in acute care areas was consistent with observations made by Daly, Rudy, Thompson and Happ (1991), who viewed the ICU culture to be bureaucratic by describing that physicians prescribed most treatment and their orders/decisions were descended to nurses. This was perhaps due to the ICU being a medically oriented high technology setting.

Not only do specifically internalised values inherent in clinical culture differentiate perceptions of self and work values, but they also prescribe the way nurses attend to and interpret their roles differently. For example, Raines (1994) investigated how nurses’ professional clinical values guided their perception and choices of ethical decision-making in the care provided by neonatal nurses \( (N = 331) \). The findings showed that each ethical value of “doing right”, “being just”, and “doing good” guided neonatal nurses’ tendency to select or not to select certain information and types of care. For instance, nurses who valued “doing right” were inclined to attach a lesser importance to infant characteristics and tended to choose limited care when infants were chronically ill. On the other hand, nurses who valued “being just” were inclined to value unit/professional protocol including policies, regulations and practice standards, and were not inclined to select limited care for chronically ill infants. In another example, Hendel’s (1993) study of Israeli first line managerial nurses \( (N = 150) \) revealed that nurses’ perception of their desired role, including making decisions, was correlated with the characteristics of ward culture.
The above studies (Hendel, 1993; Philpin, 1999; Raines, 1994) illustrate how value differences influence nurses’ perception and behaviour. If nurses are socialised to value autonomous practice, they may be predisposed to paying more attention to whether or not their need for autonomous practice is reinforced by the environment. If their environment possesses bureaucratic characteristics, these nurses may report a greater value-supply misfit. In contrast, nurses who are socialised to value rules and centralised management may report greater value-supply fit in that environment. Nevertheless, little is known about how a clinical culture, which reinforces certain images, roles and work values, actually affects nurses’ perception and interpretation of their environment and occupational roles. Therefore, empirical testing is necessary.

The Impact of the PEO Fit on Occupational Performance

A PEO misfit may be present in nursing, but the degree of the misfit nurses perceive could be different between nurses. The PEO fit is important in studying nurses’ job performance, which is defined as behaviour that is related to their roles and tasks, and that contributes to organisational effectiveness (Goodman & Svyantek, 1999), and turnover intention, which is defined as attitudinal (thinking of quitting), decisional (intention to quit), and behavioural (searching for a new job) processes proceeding voluntary turnover (Lance, 1991; Lum et al., 1998; Sager et al., 1998). The literature suggests that the environment and occupation must meet an employees’ needs in order to optimise employees’ behavioural, affective and cognitive occupational performance. When environment/occupation over- or under-reinforces employees’ needs, misfit occurs and employees’ occupational performance will be affected negatively (Dawis & Lofquist, 1984; Walsh & Holland, 1992; Law et al., 1996).

The effects of the PEO fit have been well studied in the fields of psychology and organisational studies, whereas it has received little attention in nursing. The following section describes how the PEO fit/misfit could affect nurses’ job performance and turnover intention. Then, the section moves on to an examination of past nursing studies to explore knowledge gaps in these areas. Finally, psychological and organisational studies are reviewed in an effort to provide evidence supporting the impact of the PEO fit, and to identify methodological problems.
Antecedents of Job Performance and Turnover Intention

The PEO fit/misfit affects various types of employees’ occupational performance. While the misfit influences employees’ job performance and turnover intention directly, there are other performance-related consequences, which subsequently contribute to employees’ job performance and turnover intention. This section reviews other performance-related consequences of the PEO misfit briefly, as such a review may provide additional information of how the misfit can affect employees’ job performance and intention to quit.

Fit/Misfit and Job Satisfaction

Psychological literature concerning the PEO fit suggests that an environment that fails to meet employees’ preferences and needs results in job dissatisfaction. Employees are dissatisfied with their job or organisations because they feel the environment is neglecting to reinforce their needs. They may also feel that the organisational environment does not appreciate their input. Research provides evidence to support the negative impact of the PEO misfit on employees’ job satisfaction. For example, employees tended to express job dissatisfaction, when their work values were not reinforced by the environment (Kaskel, 2000). They also showed job dissatisfaction when their values, needs, skills/abilities and personality were not reinforced by the environment and the occupation (Bretz & Judge, 1994; Vigoda & Cohen, 2002).

Fit/Misfit and Stress/Strain

The PEO misfit also contributes to stress. This is because excess and deficient environmental rewards frustrate employees, as perception of balance between input and output is not established. Moreover, excess or insufficient occupational demands either deplete or waste employees’ physiological and cognitive resources to conduct certain tasks (Edwards, 1996). Research shows that incongruence between the employees’ values and environmental supplies, and between the employees’ ability and work challenge were found to be predictive of psychological strain including boredom, depression, irritation (Edwards & Van Harrison, 1993) and tension (Choi, 1998).
Fit/Misfit and Interpersonal Relationship

Not only does the PEO misfit impact on job satisfaction and strain, but it may also affect interpersonal relationship with colleagues. Tobin (2001) found that when individuals’ needs/expectations were not met by environmental supplies, individuals progressed along a frustration-conflict-aggression-violence continuum. Consistent with these perspectives, literature suggests that nurses’ frustration toward organisations/authorities, which have not fulfilled their needs, is often sublimated by aggressive behaviour toward colleagues (horizontal violence) (Duffy, 1995). For instance, Hedin (1986) observed nursing groups attacking each other after having failed to convince authorities to support a pilot nursing program. It has been also reported that senior nurses bullying junior nurses is a common phenomenon in nursing (Daiski, 2004; Kelly, 1996; McKenna, Smith, Poole & Coverdale, 2003)

Fit/Misfit and Commitment

Lastly, the effect of the PEO fit on organisational commitment was identified by several studies. As for a value-supply fit, O’Reilly et al. (1991) showed that congruence between employees’ values and organisational culture reinforcing those values contributed to employees’ organisational commitment. The effect of value-supply fit on organisational commitment was also supported by meta-analysis studies conducted by Lee, Carswell and Allen (2000) and Verquer, Beehr and Wagner (2003). With reference to role fit, Livingstone, Nelson and Barr (1997) found that congruence between role demands and employees’ ability was related to employee’s commitment. In addition, Vigoda and Cohen (2002) showed that the global fit encompassing skills, values, needs and personality congruence was positively related to employees’ organisational commitment. This might be because employees who shared similar values, missions and goals with organisations had more support from their environment to achieve the shared goals. Because of the organisational support, the employees might feel that their effort was well rewarded.

The Links between the above Outcomes, Job Performance and Turnover Intention

Job dissatisfaction, stress, impaired interpersonal relationships, and low commitment resulting from the misfit contribute to decreased job performance and increased turnover intention. Evidence shows that job dissatisfaction contributes to turnover intention (Griffeth & Gaertner, 2001; Hom & Kinicki, 2001; Lance, 1991),
which results in actual turnover (Griffeth & Gaertner, 2001; Hom & Kinicki, 2001). Job dissatisfaction also decreases employees’ work motivation, which is related to job performance (Ton & Hansen, 2001). These outcomes indicate that dissatisfaction with jobs as a result of unmet employees’ needs motivates them to reduce input into their job/organisation. Employees may also see that staying in such environments does not lead to a sense of fulfilment, thus they tend to look for an alternative job/organisation that provides more support.

With reference to stress, research findings suggest that an increase in stress/strain contributes to decrease in job performance (Abramis, 1994; Stewart & Barling, 1996) as well as job satisfaction (Bratt, Broome, Kelber & Lostocco, 2000). Considering that stress depletes employees’ physiological, psychological and emotional resources, it is plausible to assume that stress exhausts employees’ motivation to work and actually engage in their tasks.

Negative interpersonal relationships are also reported to affect turnover intention (Cox, 2001). Furthermore, it also influences team performance through increased conflict (Porter & Lilly, 1996). As nurses work as a team, it is reasonably predictable that interpersonal relationships affect their work motivation and intentions to remain in organisations. In fact, Healy and McKay (1999) reported that nurses described interpersonal conflict with other nursing staff as the most significant stressor.

Finally, employees’ commitment enhances their job performance, and decreases turnover. Affective organisational commitment was found to be positively related to job performance (Riketta, 2002). A meta-analysis conducted by Mullen and Copper (1994) also identified that task commitment was predictive of job performance. As to the relationship with turnover intention, several studies reported that the elevated organisational commitment of employees decreased turnover intention (Blau & Lunz, 1998; Lu, Lin, Wu, Hsieh & Chang, 2002; Mathieu & Zajac, 1990; Somers & Birnbaum, 1998). These outcomes can be predictable, as employees who have an affective orientation toward an organisation or a job tend to enjoy and thrive on their job and their work environment.

The above studies elucidate how the PEO misfit indirectly contributes to decreased work performance and increased turnover intention. The next section will
explore direct relationships between the fit and job performance and between fit and turnover intention.

*Effect of Fit/Misfit on Job Performance*

A considerable number of studies on nurses’ job performance have been conducted. The majority have investigated the impact of perceived environmental and occupational characteristics on their job performance, reflecting the lack of studies on the PEO fit in nursing.

For example, some studies tested Kanter’s theory, which maintains that organisational structure including formal and informal power structure affects employees’ work motivation and satisfaction (Kanter, 1993). The findings denoted that perceived level of autonomy, access to resources and information, and support from colleagues were associated with work effectiveness and job satisfaction of 101 Canadian nurses (Laschinger & Havens, 1996), job-related empowerment of 127 US nurses (Sabiston & Laschinger, 1995), and work effectiveness of 212 Canadian nurses (Beaulieu et al, 1997). Demerouti, Bakker, Nachreiner and Schaufeli (2000) investigated an impact of perceived job demands and environmental supplies (e.g., supervisor support, decision-making participation and control over their job) on burnout of 109 German nurses. The results showed that excessive job demands were related to physical/psychological strain of the nurses, while a lack of environmental supplies were related to their disengagement from their job. Partial support for this study has been reported by Tummers et al. (2001), who tested an impact of perceived levels of job demands, social support and autonomy on job involvement of 196 general and 178 psychiatric Dutch nurses. The results showed that autonomy was weakly related to the level of job involvement.

While the above studies explained environmental and occupational factors that have a negative impact on nurses’ job performance, focusing on only environmental supplies to determine the degree of work motivation (or performance) undermines the unique entity of each individual who has his/her own specific values, needs and conception of his/her roles and self. Moreover, individuals are not passive agents who respond to environmental stimuli to produce behavioural responses, but they negotiate with their environment so as to maintain self in accordance with their self-concept, role conception and values. Therefore, it can be maintained that excluding individual
factors to study nurses’ job performance may explain little about nurses’ work motivation. In addition to the above weaknesses, studies conducted by Laschinger and Havens (1996), and Sabiston and Laschinger (1995) involved a small sample size, which might reduce the generalisability of results.

Whereas the aforementioned studies focused on only nurses’ perceptions of their environment, Jansen, Kerkstra, Abu-Saad and Van Der Zee (1996) investigated both job characteristics (e.g., time pressure, amount of autonomy given and career opportunity at work) and personal preferences for the environment/job (e.g., absence of time pressure, needs for autonomy and career opportunities) of 310 Dutch community nurses. The results showed that both job and personal factors contributed to the sense of personal accomplishment as a nurse. Nonetheless, this study also failed to examine the effect of the fit between them on nurses’ work behaviour. In other words, the data have been tested exclusively against the assumption that if scores for the job characteristics and nurses’ needs increase, then their job performance increases (see Figure 3.1). The study did not test curvilinear relationships such as an inverted-U relationship, which illustrates both excess and lack of environmental supplies over nurses’ needs (deviation from the fit) decrease job performance, proposed by the person-environment fit theories (see Figure 3.2).

![Figure 3.1. Linear model](image1)

![Figure 3.2. Curvilinear model](image2)


There is a paucity of studies, which actually investigated fit between nurses’ and environmental factors to explain job performance. Takase et al. (2001, 2002) investigated a misfit between nurses’ perception of their public image and their self-concept, and its relationship with job performance. The results showed there was a
negative correlation between the image misfit and job performance. However, the correlation was not statistically significant. This non-significant result might be attributable to an insufficient range in the scales used to measure both the image misfit (actual range was 0–4.08) and job performance (actual range was 1.44–4) (Harris, 1995), or the small sample size, which reduced the adequate statistical power to correctly reject the null-hypothesis (Cohen, Cohen, West & Aiken, 2003). In addition, this study used absolute difference scores between nurses’ perceptions of their public image and their self-concept in order to produce the image misfit scores. However, this method has been criticised by Edwards (1994, 1996, 2001, 2002) and Edwards and Van Harrison (1993) for lacking methodological rigor (which will be explained later in this chapter).

Takase et al’s studies (2001, 2002) investigated only one dimension of PEO fit (i.e., image fit). Therefore, they provide insufficient account for the effect of PEO fit on nurses’ job performance. To further explore its effect on job performance and identify the methodological problems associated with the study of PEO fit, non-nursing studies (that is, studies using non-nursing sample conducted in psychology and organisational studies) were reviewed.

Numerous psychological and organisational studies have been conducted to study the impact of the PEO fit on job performance. Many of these studies were guided by the Theory of Personality Types and Work Environments developed by Holland (1985), which concerns personality and occupational interests of an employee and how fit between their attributes and organisational characteristics affects employees’ occupational performance. For example, Fritzsche, Powell and Hoffman (1999) tested the impact of congruence between job characteristics and employees’ vocational interests ($N = 90$) on job performance based on the theory. The results showed a positive relationship between fit and performance. Although many studies have produced similar results, they have several weaknesses. Research based on Holland’s theory utilised methods and scales specifically developed to test the theory. In general, environmental characteristics are derived from the Dictionary of Holland Occupational Codes (DHOCC) or Position Classification Inventory (PCI), which designates three to six letters representing the characteristics of environment. For instance, a code “RIC” represents environmental characteristics described as Realistic, Investigative and Conventional, with the first letter illustrating the most
eminent characteristic and the last character the least. These environmental characteristics are compared with personal characteristics, which are also represented by three to six letter codes in order to yield congruence indices. While DHOC provides a set of codes already fixed to each occupation, PCI allows employee representatives to determine a set of environmental characteristics. Using either scale, all employees under investigation receive the same set of environmental characteristics, which are compared against their own personalities. This method, therefore, undermines individuals’ differences in their perception and interpretation of the environment, which contributes to perceptions of various types of PEO fit. In addition, summarising environmental characteristics and employees’ job interests and competencies into six types of letters to describe a PEO fit makes it difficult to interpret which areas need more improvement for the fit, although sophisticated statistical procedures could identify a number of different congruence indices for a research purpose.

In contrast, the following studies directly questioned employees’ needs and their perception/interpretation of environment/occupation to investigate the impact of the PEO fit on job performance. However, there are a limited number of studies in this area, compared with those based on Holland’s theory, and have methodological problems.

For example, Goodman and Svyantek (1999) attempted to examine the effect of congruence between employees’ work values and environmental culture reinforcing those values on their job performance \((N = 221)\). The results showed that task performance was predicted better by the combined effect of the personal and environmental factors than by perceived organisational culture alone. However, the study did not test a curvilinear relationship between them as proposed by person-environment fit theories.

Ton and Hansen (2001) investigated two types of fit in the areas of occupational activity (role) interests and work values. The effects of fit were tested on job satisfaction, work motivation and job performance of employees \((N = 411)\). Path analysis showed that value-supply fit contributed directly to work motivation (which was further related to job performance) and work satisfaction. On the other hand, occupational activity interest congruence (i.e., role fit) was directly related to only work satisfaction that mediated a relationship between the congruence and work
motivation. While the attempts made to illustrate multiple dimensions of fit and their
effect on occupational performance are noteworthy, Ton and Hansen’s study has some
methodological problems. A standardised score that represents activities of each
occupation was used, thus employees’ subjective perception of their occupational
activities was undermined. In contrast, the value-supply fit was produced by directly
asking the employees about their work values and perception of their environment.
However, this study used algebraic difference scores between employees’ work
values and perceived environmental supplies, and this method has been criticised as
Van Harrison (1993). For example, the equation used to produce the algebraic
difference score is expressed as \( Z = b_0 + b_1(E-P) + e = b_0 + b_1E - b_1P + e \), where \( Z \)
represents job performance, \( E \) for environmental supplied and \( P \) for employees’ work
index of the person-environment fit (or person-occupation fit) as above assumes
untested constraints such as the coefficient of \( E \) must be equal to that of \( P \).
Furthermore, the individual effects of \( E \) and \( P \) are hidden in the single index (These
criticisms also apply to the Takase et al.’s (2001, 2002) studies, which used the
absolute difference scores). In addition, the Ton and Hansen’s study tested only a
linear relationship between the \( E-P \) scores and work motivation, but did not test a
curvilinear relationship proposed by the person-environment fit theories. Thus, the
study by Ton and Hansen lacks methodological rigor.

The following studies have tested the effect of PEO fit on job performance in
accordance with the hypothesised inverted-U relationship as shown in Figure 3.2. In a
study conducted by Livingstone et al. (1997), an impact of a fit between employees’
value for creative practice and its perceived organisational support (value-supply fit),
and an impact of a fit between employees’ ability for creative practice and creative
job challenge (role fit) on job performance were tested. The regression analysis
showed that there was no significant relationship between role fit and job performance.
Furthermore, the analysis showed that only environmental factors in the value-supply
relationship contributed to job performance (i.e., there was only a linear relationship
between environmental supplies and job performance). However, these findings,
which reject the PEO model, may be attributable to the small sample size (\( N = 143 \) in
a manufacturing company), leading to insufficient statistical power to detect hypothesised relationships.

Westman and Eden (1996) studied the effect of congruence between the self-assessed ability of officer-cadets ($N = 306$) and their anticipation of demands from their military missions on job performance. Consistent with Livingstone et al.’s study (1997), the results showed that the person-occupation-performance relationship was linear as opposed to the contention of the PEO model. However, a single item used to measure each of the demands and abilities may be insufficient to elicit diverse aspects of the role fit. Moreover, a single item is unable to explain what aspects of the role fit, which this result accounted for. For instance, a physical ability-demand fit and a cognitive ability-demand fit may show different effects on one’s job performance.

The review of literature seems to suggest that the effects of the value-supply and role fit on job performance have been undetermined, as past studies tend to lack methodological rigor. An undetermined effect on job performance also applies to the image misfit. Despite the fact that multiple dimensions of the PEO fit have been identified by past studies (Spokane et al., 2000), fewer studies have investigated the effect of image misfit on job performance. However, some studies provided interesting explanations as to how the image misfit influenced one’s performance. For example, Friedman and Harber (1992) reported that Israeli elementary school teachers ($N = 641$), who perceived their principals and students’ parents viewing them more favourably than they saw themselves, were more likely to report burnout. This result could be attributable to the teachers’ feeling of receiving less understanding about them from their principals and students’ parents, leading to emotional withdrawal from their job (Friedman & Harber, 1992). Other studies used a concept of stereotype threat, which refers to a situational threat that one’s performance may be judged based on or confirm the stereotypical beliefs about a group they belong to. This threat causes pressure and anxiety, which reduce their actual performance (Steele, 1997). For instance, a study ($n_{female} = 28$, $n_{male} = 28$, experimental/factorial design) by Spencer, Steele and Quinn (1999) reported that female university students, who were (and perceived themselves as) competent in math, performed poorly in a math test after having been exposed to a widely accepted stereotype that women perform poorly in math. This is because this exposure subsequently produced anxiety/threat that their performance might confirm (or be judged based on) such a stereotype. The same
result was obtained by Steele and Aronson (1995) using black university students performing a verbal exam (Steele, 1997).

Work of self-discrepancy study also implies how the image misfit contributes to a lowered performance. Higgins, Bond, Klein & Strauman, (1986) proposed six types of self-state representation, which are actual/own (i.e., actual self perceived by self), actual/other (i.e., actual self perceived by others), ideal/own (i.e., ideal self desired by self), ideal/other (ideal self desired by others), ought/own (ought self judged by self), and ought/other (ought self judged by others). According to Higgins et al., combinations of any two self-state representations may lead to various types of self-discrepancy, which yield emotional and behavioural reactions. For example, actual self (actual/own) which was different from ideal self (ideal/own) was found to create an absence of positive outcomes (i.e., non-obtained goal: goal to achieve ideal self is not actualised), and yielded dejection-related emotional responses (i.e., dissatisfaction and a lack of pride), leading to low performance. On the other hand, a discrepancy between actual/own and ought/other was found to create a presence of negative outcomes (i.e., punishment: feeling guilty about not achieving what one should be). These negative outcomes caused agitation-related emotions within individuals, and heightened their performance in order to achieve their ought self.

Higgins et al.’s study (1986) did not test actual/self versus actual/other discrepancy, which is the main focus of the thesis. However, their study provides a valuable insight that dejection-inducing self-discrepancy leads to lowered performance, and this may apply to the nursing context. Despite the fact that nurses have made a considerable effort to improve their professional practice and image, the stereotypical public image of nurses still exists. Due to the constant absence of a lack of understandings from society (i.e., non-obtained goal), nurses may incur dejection-related emotions such as dissatisfaction with the profession and damaged pride. As a result, nurses may exhibit lower job performance. Supporting this assumption, Takase et al.’s (2002) study reported that the discrepancy between nurses’ self-concept and nurses’ perception of the public image of them was negatively correlated with nurses’ pride in belonging to the nursing profession (collective self-esteem) and job satisfaction. In addition, collective self-esteem and job satisfaction were positively related to job performance. Although there are some methodological problems in Takase et al’s study as identified above, these results seem to support the self-
discrepancy theory, which explains how the image misfit is indirectly related to job performance through dejection feelings.

The nurse-public image misfit may provoke lowered job performance. However, more empirical examination is needed to test the impact of the image misfit on nurses’ job performance as well as to test the shape of the relationship (i.e., either linear or curvilinear) in order to provide a more accurate picture of the effect of the image misfit.

In summary, the studies reviewed above suggest that an impact of the PEO fit on job performance is undermined due to lack of empirical investigation. There are few studies on this topic conducted in nursing, which examined a fraction of the PEO fit. The findings reported in other disciplinary fields are also identified as less convincing due to a lack of methodological rigor. Hence, the impact of the fit on nurses’ performance needs to be tested.

The Effect of Fit/Misfit on Turnover Intention

Nursing studies, related to nurses’ turnover or turnover intention, were reviewed in order to examine how the effect of PEO fit on turnover intention has been studied in nursing. The review of the literature revealed that nursing studies tended to stress impacts of either job satisfaction or stress, which are the outcome of the PEO fit, or either nurses’ perception of their environment/occupation or their needs on turnover intention.

For instance, Shader, Broome, Broome, West and Nash (2001) and Lucas, Atwood and Hagaman (1993) investigated the relationships between such independent variables as job satisfaction, stress, and group cohesion, and dependent variables as turnover intention and actual turnover. The samples consisted of 241 and 385 US nurses respectively. The analyses concluded that job satisfaction, reduced stress, and better group cohesion were related to reduced turnover intention, which was further related to reduction in actual turnover rate. Yet, these independent variables are outcomes of the PEO fit, therefore, the findings of the studies have little implication on how nurses’ perception of the fit directly contributes to their turnover intention.

Alexander, Lichtenstein, Oh and Ullman (1998), Lum et al. (1998), and Tzeng (2002b) also investigated causes of turnover intention on a large sample of US mental
health nurses, 361 Canadian paediatric nurses and 648 Taiwanese nurses respectively. The studies demonstrated the impact of various dimensions of job satisfaction including pay satisfaction and satisfaction with autonomy and job demands on turnover intention. Once again, job satisfaction is a result of the PEO fit, and none of these studies considered the effect of the fit between nurses’ preferences and their perceptions of the environment/occupation on their turnover intention. In fact, when nurses’ personal factors are considered as influential factors on their turnover intention or job satisfaction, the aforementioned studies tended to look at nurses’ demographic characteristics, rather than their needs or values. This tendency is also seen in a recent study, which investigated the impact of nurses’ demographics characteristics on their turnover intention involving 4418 nurses in Vermont in the USA (Ramber, Palumbo, McIntosh & Mongeon, 2003).

The study by Dolan, Van Ameringen, Corbin, and Arsenault (1992) looked at the impact of such environmental characteristics as perceived level of professional latitude (i.e., nurses’ perceived control over their practice) and such occupational characteristics as work demands and role difficulties on turnover intention of 1,237 Canadian nurses. Regression analysis revealed that each of these factors contributed significantly to the propensity to quit their job. However, nurses’ needs were not considered.

As for the public image of nursing, Lim and Yuen (1998) investigated 711 Singaporeans’ perceptions of their public image and examined its impact on their turnover intention. Regression analysis revealed that the perception of negative public image was a significant indicator of nurses’ intention to quit their job after controlling for their demographics. Nurses’ perception of their public image was not included in this study. Therefore, no comparison between nurses’ self-concept and their perception of their public image was made.

The tendency of nursing studies to emphasise nurses’ perceptions of their environment/occupation, nurses’ job satisfaction, and their demographic factors in studying the causes of turnover intention was also evident in a meta-analysis conducted by Irvine and Evans (1995) and Yin and Yang (2002), and reviews of nurses’ turnover literature conducted by Tai, Bame and Robinson (1998) and Borda and Norman (1997). These studies provided support for the impact of work characteristics, job satisfaction and nurses’ demographic characteristics such as
age/experience on turnover intention. However, little contribution has been made to reveal the degree of the PEO fit in nursing and its subsequent effect on turnover intention.

In contrast to the above nursing studies which excluded nurses’ needs in studying turnover intention, Mills and Blaesing (2000) investigated an impact of nurses’ work values on their career satisfaction (i.e., whether they would choose their profession again or recommend others to choose the nursing profession) by reanalysing the data \(N = 3298\) collected from 92 hospitals in Missouri in 1989, the time when the last nursing shortage struck the US health care system. The results showed that nurses who valued their professional status, patient care and pride in their profession tended to be satisfied with their nursing career. However, the study did not test whether their work values were met by the environmental supplies nor how the fit in the work values contributed to nurses’ career satisfaction. On the contrary, the study seemed to assume that any work values related negatively to career dissatisfaction provided the indication that there was imbalance between nurses work values and actual rewards provided to them in their environment, without testing the effect of the fit on their career satisfaction.

Many nursing studies like the above provides partial explanations as to the antecedents of nursing turnover. Nevertheless, exception applies to a few studies that have provided insight into the effect of the PEO fit on nurses’ turnover intention. Song, Daly, Rudy, Douglas and Dyer (1997) examined the effect of the PEO fit on the turnover intention of 124 critical care nurses as a part of testing the impact of environmental reengineering in a critical care area. In this study, the participants were categorised into two groups, a coherent group and a discrepant group. The coherent group included nurses who preferred the reengineered environment that was designed to increase nurses’ autonomy and opportunities for decision-making, and perceived their environment to be congruent with their preference. In contrast, the discrepant group encompassed nurses who preferred the reengineered environment, but perceived their environment to be a conventional ICU type that emphasised central decision-making and the bureaucratic management. Although the study did not report on the direct impact of the PEO fit on turnover rate, ANOVA showed that the discrepant group reported a significantly higher job dissatisfaction, which was often seen as an antecedent of turnover intention in nursing studies. However, testing the
effect of the fit between only two groups (i.e., the coherent and the discrepant groups) does not fully explain how various degrees of the fit, perceived by nurses, affect their turnover intention. Hence, more detail examination is necessary.

Dunn (1992) offered interesting findings on the relationship between various dimensions of PEO fit and seven occasions of nurses’ turnover in home health nursing in the USA. An exploratory qualitative study conducted by Dunn showed that nurses changed their job because certain dimensions of their needs were not reinforced by their environment, and importance of the dimensions differed according to their age. Nurses in the early stages of their career changed jobs because their need for growth and learning was not met by the environment, whereas incongruence between nurses’ need for skill utilisation and its occupational reinforcement caused nurses in the mid career to determine turnover. In late career, nurses’ focus shifted to their self-image. When their self-image as a caring agent was no longer congruent with their experience of caring patients, the experienced nurses decided to leave their job. Not only did this study offer the effect of the PEO fit on turnover, but it also provided information related to changing values of nurses according to their experience.

While Dunn’s (1992) study provided useful insights for this thesis, reviewing nursing studies also underscored the lack of studies on nurses’ turnover intention from the viewpoint of PEO fit. In an effort to gain insight into the effect of the PEO fit on turnover intention and to identify more appropriate methods to be considered in this study, related psychological literature was reviewed.

Research in psychology tended to suggest that the fit had a significant impact on turnover intention or turnover per se. For instance, Mitchell et al. (2001) investigated the effect of the PEO fit on the turnover of grocery and hospital personnel including nurses. The scale used in this study encompassed four dimensions of the PEO fit in terms of values, personality, knowledge, and skill/ability. The results for the hospital sample ($n = 208$) showed a significant negative correlation between the fit and voluntary turnover and even stronger correlation between the fit and turnover intention. However the hospital sample included nurses as well as other personnel such as administrators, maintenance workers, and the cafeteria personnel. Thus, it was difficult to determine how nurses’ perception of the fit was related to turnover intention. Moreover, items in the scale included general comments on the PEO fit such as “My values are compatible with the organisation’s values” (Mitchell
et al., 2001, p. 1121), which participants answered using a Likert scale, yes or no response or fill-in-the-blank response options. Therefore, it was unknown which areas of nurses’ values were or were not met by the environmental characteristics. Furthermore, measuring only the degree of the fit undermined the degree of importance nurses attached to each factor and the amount of actual supplies they received from the environment. In addition, it obscured how each of the values and the supplies component measure contributed to nurses’ turnover intention (Edwards, 2001).

Villanove, Bernardino, Johnson and Dahmus (1994) examined the effects of the role fit on turnover using motion picture theatre personnel. The role fit was measured by a specially developed scale to measure the matches between employees’ desirable job characteristics and the actual job characteristics in the motion picture theatre (N = 217). The scale was administered to all the job applicants, and turnover rate was measured by checking the number of employees who left the job after 6 months of employment. The results revealed that the perception of the role misfit was significantly related to actual turnover rate.

As to the effect of the value-supply fit on turnover intention, there have been an increase in the number of studies utilising the Organisation Culture Profile (OCP), designed by O’Reilly et al. (1991). A fundamental assumption of the OCP is that the organisational culture can be represented by a single profile that reflects centrality, intensity, and commonality of organisational value system perceived by members of an organisation. Thus, common procedures for measuring the fit is progressed by 1). asking senior personnel (e.g., managers) within an organisation to rate their organisational culture, 2). establishing inter-rater reliability of organisational culture rated by those seniors, 3). aggregating those data to produce a single profile for organisational culture, and then 4). correlating the profile with preferences of employees who are not involved in producing the profile (O’Reilly et al.).

Using this scale, O’Reilly et al. (1991) and Chatman (1991) confirmed that accountants (N = 171) who reported a greater value-supply fit were more disinclined to display turnover intention. Moreover, the additional analysis revealed that the fit index had more power to predict turnover intention than either employee’s values or the organisational culture alone. The same results were obtained by a study conducted by Warren (1997).
While the above studies recruited non-nursing personnel, Vanderberghe (1999) involved nurses \((n = 433)\) from 19 Belgian hospitals. Using the OCP, Vanderberghe (1999) demonstrated the negative effect of value-supply misfit on nursing turnover over a 1-year period. The study also identified that perception of organisational culture differed by hospitals, units, and professional groups including nurses, physicians, and administrators. However, the study did not report what factors nurses valued and how nurses perceived organisational supplies, which made it difficult to develop counteractive measures to prevent nurses’ turnover.

The studies that adopted the OCP seem to be successful in predicting the effects of value-supply misfit on turnover intention of employees. However, the OCP’s assumption that organisational culture can be represented by a single profile undermines each employee’s unique perception of an organisational value system. Van Vianen (2000) articulates the cautious use of a single cultural profile to predict employees’ turnover intention, as turnover intention is “based on cognitions of the person, and these cognitions are primarily determined by the subjective experiences of the person” (p. 117). Van Vianen (2000) also argues that subcultures of organisations are often neglected by the person-organisational fit studies. Vanderberghe’s (1999) study is a good example, which demonstrated significant differences in perception of clinical culture across different units and professional groups.

In addition, Van Vianen (2000) identified that different dimensions of the value-supply fit contributed to employees’ turnover \((N = 359)\). In Van Vianen’s (2000) study, fit between new employees’ work values and recruiters’ (i.e., supervisors and peers) perception of organisational supplies were examined \(\text{(Note. Van Vianen emphasised the importance of comparing new employees’ work values and their subjective perception of the organisation. However, new employees did not have a good perception of the existing organisational supply system. Therefore, the recruiters’ subjective perception of the organisation was compared with the new employees’ work values instead.)}\). The study revealed that the fit between new employees’ work values and the organisational supplies showing concern for people (e.g., seeking and receiving positive feedback, peer cohesion, growth opportunities, and decision-making participation) had a significant impact on turnover intention. Moreover, the relationship between employees’ values, perceived organisational supply system and turnover intention was curvilinear. However, the fit between new
employees’ work values and organisational supplies showing concern for goal accomplishment (e.g., seeking and receiving rewards, clear standards of performance, and competition) did not any effect on turnover intention.

Van Vianen’s (2000) findings imply a cautious use of a single item to measure the PEO fit index. For instance, Saks and Ashforth (1997) adopted a single item scale, such as “To what extent does your new organisation measure up to the kind of organisation you were seeking?” (p. 406) to measure a global person-organisation fit. The results indicated a negative relationship between the global fit index and turnover intention. However, the use of the single item scale does not explain which aspects of the person-organisation fit are more predictive of turnover intention, and which aspects are not. Van Vianen’s (2000) study suggests the use of a multidimensional instrument to measure both personal values of employees and subjective perception of their work environment to study the impact of the PEO fit on turnover intention.

Taris and Feji’s (2001) study investigated the effects of value-supply fit on job satisfaction, turnover intention and psychological well-being. The fit indices were produced by asking respondents (N = 1257–1775) to rate multiple dimensions of both their values and their subjective perception of environmental supplies. The results did not only indicate that value-supply fit contributed significantly to turnover intention, but also showed that the fit indices added additional variances to those explained by independent effects of employees’ values and their perceived work environment. Moreover, the relationship between personal values, organisational factors and turnover intention was curvilinear. This study exhibited the advantage of examining interaction effects of both employees’ work values and environmental supplies on employees’ turnover intention.

Whereas many studies emphasise the effect of role and value-supply fit on turnover intention, few studies have uncovered the effect of image misfit. Thus, an assumption can only be made by exploring past studies which indirectly connect image misfit and turnover intention. For example, image misfit in nursing is positively correlated with nurses’ job dissatisfaction (Takase et al., 2001, 2002), as nurses feel their professional image is not reinforced by social recognition. Furthermore, job dissatisfaction has been found to be related to turnover intention (e.g., Griffeth & Gaertner, 2001). Although these studies suggest indirect links between image misfit and turnover intention, the direct effect of image misfit on nurses’ turnover intention
still remains within the realm of assumption. As both image misfit and high turnover rate are major concerns in contemporary Australian nursing, the direct impact of the image misfit on turnover intention should be clarified empirically.

Summary

A review of the literature suggests that the public holds stereotypical images of nursing/nurses. The literature also indicates that there has been a slow improvement in the public image of nurses over time. Nursing scholars articulated that these stereotyped images might have oppressed nursing practice. However, little has been uncovered due to the tendency of past studies to look at only the public images of nurses, and effort to relate nursing stereotypes to nursing practice have not been made.

In contrast to the nursing stereotyping in society, the nursing literature suggests that nurses do develop a professional self-concept, role conception and work values as a result of professional socialisation in nursing. The literature also suggests that the difference between how nurses view themselves to be and how society perceives nursing may contribute to the existence of the PEO misfit in the areas of nursing roles and the values of nursing.

Consistent with this assumption, nursing studies have shown that nurses perceive a misfit in the nursing roles desired by nurses and those actually assigned to them in hospitals. That is, the roles nurses assume to be their responsibilities such as caring and decision-making were not reinforced by the environment. This illustrated presence of role misfit. Yet, unreliable scales to measure nurses’ role conception have overshadowed the validity of the studies. Moreover, most studies have been conducted outside Australia, therefore, whether or not role misfit exists in Australian nursing is largely unknown.

With reference to the relationship between work values held by nurses and supplies provided by the environment, there has been insufficient work on determining the presence or absence of the value-supply misfit. This is because past studies have tended to emphasise nurses’ perception of or satisfaction with their environmental characteristics. Hence, what nurses seek in their environment, and how nurses’ work values are reinforced by environmental supplies have been rarely studied. A lack of knowledge as to nurses’ values makes it difficult to interpret
nurses’ perceptions of their environment, as there is no benchmark to evaluate which environmental supplies are or are not congruent with nurses’ work values.

Another gap in nursing knowledge relates to under-exploration of factors that moderate nurses’ perceptions and interpretations of the PEO fit. Investigating the effects of the moderating variables is important, as it is nurses’ subjective interpretation of the relationship between their needs and environmental/occupational characteristics which directly affects their work behaviour. This literature review has indicated that nurses’ collective self-esteem, the length of clinical experience, and clinical culture they belong to may interfere with nurses’ perceptions and interpretations of the fit. However, few nursing studies that have investigated the impact of these variables exist.

Finally, most nursing studies reviewed were directed at examining the effects of either environmental or occupational characteristics on nurses’ job performance and turnover intention. A few studies explored nurses’ needs and the effect of the relationship between nurses’ professional needs and environmental/occupational factors on these dependent variables. Examining only environmental/occupational factors as antecedents of nurses’ performance and turnover intention leads to a partial explanation of nurses’ occupational performance, as they lack an evaluation of the environmental supplies and occupational challenges against nurses’ needs. Moreover, they provide nursing scholars and professional organisations, which have been endeavouring to improve the nursing practice, with an insufficient indication as to which factors in the environment and nursing roles need most attention for improvement in accordance with nurses’ needs.

In conclusion, there may be a difference in the image of nurses held by nurses themselves and society, and this image misfit may be contributing to the existence of the PEO misfit in nursing. The psychological literature reveals that the PEO misfit leads to low performance and a high turnover intention in employees. Nevertheless, few empirical investigations have verified these issues in nursing, especially within the Australian context. As nurses’ image and the turnover of competent nurses are a major concern in Australia, examining the above relationships may be helpful in developing counter measures against nurse stereotyping and in addressing the nursing retention problem.
CHAPTER 4: STUDY HYPOTHESES

Introduction

The conceptual model (see Chapter 2) has provided information regarding how different images and beliefs about nursing, held by society and nurses, may affect nursing practice and create PEO misfit in nursing. The model has also highlighted how perception and interpretation of the fit/misfit may differ by individual characteristics, and how the misfit may influence nurses’ occupational performance. Based on the conceptual model in Chapter 2 and discussion made in Chapter 3, this chapter is intended to draw study hypotheses illustrating relationships between the image of nurses, role and value-supply fit in nursing, individuals’ factors of nurses, and their occupational performance.

First, hypotheses were drawn on how images of nursing held by nurses and the public were related to nurses’ perceptions of their ideal and actual nursing practice. Then, hypotheses as to the effects of individuals’ differences, such as the degree of collective self-esteem, the length of clinical experience and clinical culture nurses belong to, on the perception and interpretation of the fit, were presented. Finally, hypotheses illustrating relationships between the fit and nurses’ job performance and turnover intention were discussed.

Hypothesised Relationships between the Image of Nurses and Nursing Practice

The conceptual model illustrates that the nurse, nursing and the health care environment are influenced by the expectations toward nursing held by society and the nursing profession, as they exist within the nursing universe. This denotes that if society and the nursing profession have shared views toward nurses, nurses’ conception of their professional images, roles and values will be reinforced in the health care environment and society. However, if there exist differing expectations between them, a conflict between nurses’ professional needs and environmental/occupational reinforcement may arise.

The nursing literature indicates that the public image of nurses could be more or less stereotyped. Nurses are seen to be warm, caring, and hard-working professionals. However, when the public comes to express their image of nurses in terms of their leadership, autonomy and power statuses, they still see nurses as
followers of doctors (e.g., Rossiter et al., 1998; Tang et al., 1999). While this stereotyped image does not reflect accurate pictures of nurses’ abilities and roles, it may reflect how nurses are treated and actually constrained in the health care environment. In fact, the literature indicates that nurses tend to express they have less opportunity to engage in decision-making and caring than they desire (e.g., Taylor et al., 2001), and they are dissatisfied with the level of autonomy, recognition, and career advancement structure available to them (e.g., Adamson et al., 1995; National Review of Nursing Education, 2002).

The psychological literature suggests that there may be a link between the public image of nurses and how nurses are actually treated in the health care environment. Through studies on stereotyping, psychologists maintain that individuals tend to use their images of others to guide their expectations of and interactions with others (Lott & Saxon, 2002; Macrae, Bodenhausen et al., 1994; Rudman & Borgida, 1995). Ashmore and Del Boca (1981) and Snyder (1981) further articulate that individuals’ behaviours are often directed to constrain others’ behavioural options in order to obtain confirming facts correspondent to their images. This type of behavioural manipulation may occur because individuals are motivated to act in accordance with their own beliefs (Street, 1991; Strasen, 1992). It is also because individuals are motivated to preserve their own beliefs of others (Fiedler & Bless, 2001) that their behaviour may be directed to suppress other’s behaviour, which disconfirms their beliefs. These studies inform that the public image of nurses may affect nursing roles (i.e., how nursing should be consumed) (Hughes, as cited in Cunningham, 1999; Kalisch & Kalisch, 1987) and values of nursing (i.e., how nurses should be rewarded) (Brooker & Eakin, 2001; Hendricks & Baume, 1997). For example, the stereotyped public image of nurses as being assistants of doctors may influence the health care environment and the public interaction with nurses in ways that constrain nursing/nurses into a subordinate position in order to obtain actual behavioural conformation of nurses. Consequently, nurses, who perceive the public image of them to be stereotyped, may experience their roles to be constrained and their environment to be not rewarding. In contrast, if the public image of nurses accord with nurses’ professional orientations, nurses may be enjoying expressing their abilities and working in the environment, which is reinforcing their professional needs. This assumption led to formulation of the following hypothesis.
Hypothesis 1: Positive relationships exist between the perceived public image of nurses, nurses’ perception of actual roles and environmental supplies.

Symbolic interactionists (Cooley, 1902/1968; Mead, 1925/1968) maintain that individuals’ beliefs are manifested with behavioural cues. Thus, people see how others view themselves through looking into how others respond to them. This suggests that nurses acquire social beliefs toward them by observing how society treats them. In addition, the symbolic interactionists contend that others beliefs of self form an individual’s self-concept. While this implies that nurses’ self-concept may be influenced by the public image of nursing that may be stereotyped, it is questionable if social beliefs have the sole effect on the formation of nurses’ self-concept. This is because nurses also acquire professional beliefs/values by internalising with professional role models in the process of professional socialisation (Laing, 1993). Advancement in the professionalisation in nursing also results in enhancing nurses’ professional self-concept (du Toit, 1995).

Although different beliefs toward nursing may exist in the nursing universe, it might be plausible to assume that nurses develop and maintain a professional self-concept as a result of the professional socialisation. The reasons of this assumption were multi-fold. First, according to the social identity theory (Tajfel & Turner, 1986), individuals are motivated to develop a positive self-concept by being selectively attentive to and/or interacting with others who provide a positive feedback to them. This suggested that nurses might be more motivated to internalise professional image of themselves through selective attention to and interaction with professional role models. Second, Rosenberg (1973) maintains that individuals are more greatly influenced by information that comes from valuable and credible sources. Therefore, nurses may discredit the public image of them, which may be distorted in line with the nursing stereotyping. Third, the self-verification theory argues that individuals strive to maintain an established or existing self-concept in order to maintain the sense of coherence. This motivation also encourages individuals to selectively attend to information that confirms their self-image or to alter the images of others (Pinel & Swann, 2000; Swann, 1987; Swann & Schroeder, 1995). As indicated in the nursing literature, nurses tend to develop a professional self-concept though formal education and interaction with professional role models (Strasen, 1992). Thus, it was assumed that nurses might strive to maintain their professional self-concept despite
confrontation with an oppressive health care environment reflecting the nursing stereotyping. Lastly, Argyle (1981) suggests that although self-concept is tied with social feedback, it is also relatively free to form due to an individual’s ego. This denoted that development and maintenance of nurses’ self-concept might depend on their motivation to preserve positive/consistent self-views. On these grounds, it was postulated that nurses would view themselves more positively than how they would perceive the public see them due to their motivation to either enhance or preserve their professional images.

Hypothesis 2: Nurses’ self-concept is more positive than the image they believe the public has of them.

As described by the PEO model, the person is an integrated being whose mindful, bodily and spiritual qualities are so interdependent that one part of quality influences the others. Hence, nurses’ professional self-concept may be related to their role conception and work values. This is because individuals are not inclined to act differently from their self-image (Street, 1991; Strasen, 1992). Individuals also negotiate their identity through role-taking (Hogan & Roberts, 2000; Law et al., 1996). Considering themselves to be logical, rational and independent may lead nurses to take decision-making opportunities. By viewing themselves as being warm and compassionate, nurses may assume caring to be an aspect of their professional role. In the same way, nurses’ professional self-concept is assumed to lead them to value such work characteristics as autonomy, independence, social recognition and respect, as these are fundamental attributes of a profession (Pavalko, 1971). Nurses as professionals may also seek career advancement and better pay, as these communicate nurses’ professional status. Therefore, it could be maintained that nurses’ self-concept would be associated with their role conception and work values.

Hypothesis 3: Positive relationships exist between nurses’ self-concept, their role conception and work values.

The above discussion suggests the images of nurses held by society and nurses may be different, and these different images create the image misfit in nursing. The different images held by nurses and society may influence nursing practice differently. While the stereotyped public image of nurses is assumed to constrain the roles of nursing and environmental supplies available to nurses, nurses’ professional
self-concept is believed to inspire them to pursue professional roles and work values. In other words, the image misfit is assumed to contribute to the existence of other dimensions of the PEO misfit in nursing, which are the role and value-supply misfit. Figure 4.1 illustrates the relationships posed in hypotheses 1 to 3, and how the images of nursing held by society and nurses may contribute to the role and value-supply fit/misfit in nursing.

![Diagram](image)

**Figure 4.1.** Study framework illustrating the effects of nurses’ self-concept and the public image of nurses.

Hypothesised Relationships between Individual Differences and the Perception/Interpretation of the PEO Fit

Nurses may have a fairly accurate picture of their public image. According to the conceptual model identified in Chapter 2, however, each nurse’s understanding of their public image can be slightly different due to their subjective perceptions and interpretations of the world. More importantly, it is the individuals’ perception and interpretation of their environment that affect subsequent information processing and their behaviour (French & Kahn, 1962; Dunn et al., 1994; Stokols, 1990, 1992; Little, 2000; Magnusson & Törestad, 1992; Walsh et al., 1992). Various factors affect individuals’ perception and interpretation. This thesis examined the effects of nurses’
collective self-esteem, the length of clinical experience and clinical culture on their perception/interpretation of the fit.

Kelly (1991) and French and Kahn (1962) maintain that individuals construe psychological (or subjective) representation of the world, which helps them to understand the world as well as to protect themselves from threatening external information by discrediting or distorting it. These subjective perceptions and interpretations of events are likely to be influenced by an individuals’ motivation to enhance or protect their self-concept (Rosenberg, 1973; Kirschenbaum & Henderson, 1989). Studies on self-esteem suggest that people with high self-esteem are more motivated to manipulate information in a self-enhancing fashion. In other words, they are inclined to selectively pursue positive feedback on selves and disregard/distort negative feedback according to their self-concept. This fulfils their need for gratification. They have little worry about future possible events that disconfirm themselves because they are so confident and certain about their positive attributes. In contrast, people low in self-esteem attend to and/or interpret information in a self-protective manner. They like to stay where they are and seek self-consistent information to maintain self-beliefs/concepts. This is because they lack the resources to ward off worries that they may encounter events, which disconfirm their own elevated beliefs of self in the future (Baumeister, 1993; Campbell & Lavallee, 1993; Spencer et al., 1993; Swann, 1987).

Research on nurses’ self-concept indicates that nurses generally possess positive self-images (Cowin, 2001; Murray, 1997; Takase et al., 2001, 2002). This is because nurses may be motivated to enhance or protect their professional self-concept established though professional socialisation. These self-esteem studies imply that nurses with high collective self-esteem are more motivated to enhance their self-concept by dismissing negative feedback from the public, selectively attending to positive feedback from the public, or even distorting their perceptions and interpretation of the feedback in a more positive manner so as to enhance their self-integrity. In a similar fashion, nurses’ perceptions of the environmental supplies and their actual roles may be enhanced by the effect of high collective self-esteem. Literature suggests that high self-esteem functions to buffer negative environmental cues (Mossholder et al., 1981; Brockner, 1988). Hence, individuals with high self-esteem are more resistant to environmental stressors than those with low self-esteem.
Perceiving/interpreting their public image, environment and occupation positively would reduce discrepancies with nurses’ self-concept, role conception and work values. Hence, nurses with higher collective self-esteem were assumed to experience a better PEO fit (see Figure 4.2).

In contrast, nurses with lower collective self-esteem are more protective of their current self-concept. Thus, they may still disregard the negative public image of nurses in protecting their professional self-concept. However, they may be less predisposed to distort their perceptions/interpretations of their public image and the existing states of their roles and the health care environment into favourable ones than those with higher collective self-esteem. This may result in nurses with lower collective self-esteem perceiving the public image of them, their environment and occupation more negatively than those with higher collective self-esteem. As a result, it may intensify the perception of the PEO misfit among the former group of nurses. This led to the derivation of the following hypothesis.

Hypothesis 4: The higher nurses’ collective self-esteem is, the greater their perception of the PEO fit in their image, roles and values.

![Figure 4.2](image-url)  
*Figure 4.2. Study framework illustrating the effects of nurses’ collective self-esteem on their perception of the PEO fit.*

While having high collective self-esteem may reduce perception of the PEO misfit, a longer clinical experience may function in an opposite direction. The theories on self-concept contend that individuals are resistant to lowering their self-concept, and tend to engage in a self-enhancing or verification process by negotiating with their environment (Swann, 1987; Tajfel & Turner, 1986). This indicates that nurses may be motivated to disregard the stereotypical public image of nurses so as to preserve or enhance their self-concept. In other words, nurses’ self-concept may be
less affected by the negative public image. However, Swann (1987) also implies that people may lower their self-beliefs if they are consistently provided negative feedback that is discrepant from their positive self-beliefs. This is consistent with the theory of learned helplessness, which suggests that when individuals are exposed to repetitive reinforcement for a long period of time, they are more likely to conform to the reinforcement (Peterson et al., 1993). The concept of learned helplessness implies that nurses with longer clinical experience have learned to adjust themselves to their environment by assimilating a more negative self-image, roles and work values. This, in turn, leads them to experience a better PEO fit than those with less experience (see Figure 4.3). In contrast, nurses with less clinical experience may be more likely to preserve their self-concept, role conception and work values against their perception of a negative environmental feedback. Hence, they may experience a reduced PEO fit (see Figure 4.3). On these grounds, the following hypotheses were proposed.

Hypothesis 5: There are no relationships between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with less clinical experience.

Hypothesis 6: Positive relationships exist between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with a longer clinical experience.
Nurses with shorter experience

Nurses with a longer experience

Figure 4.3. Study framework illustrating the effects of the length of clinical experience on their perception of the PEO fit.

As to the clinical culture, nursing studies indicate that each clinical area develops a specific clinical culture that reinforces certain beliefs about nurses, nursing roles and work values. These cultures are internalised into nurses through professional socialisation and affect their perception and interpretation of their environment. Due to a variety of clinical cultures that vary at hospital and unit levels, this thesis declined to make an assumption on each clinical culture. Therefore, a hypothesis was formed as follows.

Hypothesis 7: Nurses in different clinical areas will report different professional orientations and perceptions of their public image and their environment/occupation. Thus, nurses in different clinical areas will report different degrees of the PEO fit in their image, roles and work values.

Hypothesised Effect of the PEO Misfit on Job Performance and Turnover Intention

The PEO model contends that the misfit negatively affects employees’ job performance (Law et al., 1996). This is because their needs are not fulfilled by their environment/occupation, and this impairs their affective orientation toward their job and organisation (Kaskel, 2000). Lowered job performance also results from stress and frustration induced by either excess or deficient environmental supplies and...
occupational challenges compared with employees’ values and abilities (e.g., Mausner-Dorsch & Eaton, 2000; Choi, 1998). Employees’ frustration can be directed toward colleagues (Tobin, 2001), and conflict with colleagues further contributes to decreased team performance (Porter & Lilly, 1996).

In addition, the self-discrepancy theory implies that the public image of nurses, which is not correspondent with nurses’ self-concept, may induce dejection-related emotional responses (i.e., dissatisfaction and lack of pride with their profession), which decreases individuals’ task performance respectively (e.g., Higgins et al., 1986). Thus, nurses who perceive negative public evaluations of them may exhibit feelings of dejection such as impaired pride in and dissatisfaction with their profession (Takase, 2000), leading to decreased job performance. Moreover, the theory of stereotype threat suggests that fear to confirm or to be judged based on their stereotypes cause individuals undue stress, which subsequently reduces their performance (Steele, 1997). Hence, these theoretical perspectives yielded the following hypothesis (see Figure 4.4).

Hypothesis 8: Positive relationships exist between perceived fit in nurses’ image, roles and work values and their job performance.

As for turnover intention, the person-environment theory suggests that when employees’ skills and role interests are not reinforced by job demands, they feel dissatisfied with their roles, thus intend to leave a job (e.g., Walsh & Holland, 1992). It is also suggested that incongruence between employees’ work values and environmental supplies reduces employees’ intention to stay in their current occupation and organisation (Dawis & Lofquist, 1984; Lofquist & Dawis, 1991). This is because employees feel that their job performance is not adequately rewarded by the organisation, and their desired outcomes (e.g., endowment of autonomy, recognition and a better pay) cannot be achieved by their job. Hence, nurses’ desire to engage in such nursing roles as caring and decision-making (role conception) and their needs to satisfy professional work values must be met by the existing states of their occupational roles and in the health care environment so as to enhance their intention to remain in the current job.

In addition to the role and value-supply misfit, the perception of image misfit may also be predictive of nurses’ turnover intention. This is because nurses who
perceive the public image of them more negatively than how they view themselves tend to express dissatisfaction with and less pride in their profession (Takase, 2000), as social recognition is an important asset for any profession. As a result of reduced affective orientation toward their profession, nurses are more likely to leave their jobs (e.g., Griffeth & Gaertner, 2001). For these reasons, the following hypothesis emerged (see Figure 4.4).

Hypothesis 9: Negative relationships exist between the perceived fit in their image, roles and work values and nurses’ turnover intention.

![Figure 4.4. Study framework illustrating the effects of the misfit on job performance and turnover intention.](image)

Summary

This chapter considered relevant theories and study findings presented in the previous chapters in order to draw hypotheses illustrating the PEO relationships within the nursing universe. The thesis lays the foundation of the PEO misfit on discrepant images of nurses held between society and nurses. This image misfit was discussed in relation with role and value-supply misfit, which characterises multiple dimensions of PEO misfit in nursing. The thesis also incorporated hypotheses illustrating how personal factors of an individual nurse might affect perception and interpretation of the fit. Finally, the impact of the misfit on nurses’ occupational performance was depicted.
CHAPTER 5: METHODS OF INVESTIGATION

Introduction

This chapter presents the method that has been developed to answer the study questions and hypotheses. The main methodological approach adopted by this thesis was a quantitative design. This was to quantitatively test the relationships among the variables, and to enhance the generalisability and applicability of the thesis findings to the Australian nursing population. However, the phenomena of interests are complex. Scores obtained by administering a questionnaire to participants may not have provided explanation behind the responses, which could otherwise be probed by a researcher-participant encounter. Introducing tight control of variables in a quantitative study may also loose subjective interpretation of phenomena, which can be offered by a qualitative approach. Hence, this thesis also adopted a qualitative method in order to provide participant opinions and richness to the results of the quantitative study (Myers & Haase, 1988; Polit & Hungler, 1991). The qualitative approach was also utilised to discuss counteractive measures to improve the public image of nurses.

This chapter first presents the method of the quantitative study, and then moves onto the presentation of the qualitative method. Ethical guidelines of the study are also presented.

Methods of Quantitative Study

Study Design

This thesis used a correlational design to investigate relationships between the variables. A correlational study is unable to establish causal relationships whereas an experimental and a longitudinal design can. However, this thesis rejected the use of the later two research designs for the following reasons. First, an experimental design approach was rejected because manipulation of the independent variables, as is often done in a laboratory setting, would have reduced external validity and the applicability of the study findings. For example, giving nurses false information of the public image of them and testing nurses’ subsequent occupational behaviour may explain their causal relationship. However, it does not explain what is happening in a real situation. Polit and Hungler (1991) contend that the use of a correlational design
is pertinent when a researcher wishes to understand relationships of variables in a natural setting. Therefore, the adoption of a correlational design allows the researcher to explain more context-bound phenomena under investigation. Second, a longitudinal design was rejected, although this design would have enabled the researcher to establish the time effect on the changes in nurses’ self-conception as well as the transformation of the PEO relationship throughout the lifespan as depicted in the conceptual model. This was because it was difficult to investigate the change in one’s conceptions of self, roles and values within a limited timeframe provided for this thesis, as such change may occur over a lengthy period of time. Therefore, this thesis was intended to capture a snapshot of nurses at the time the study was conducted. For these reasons, the use of a correlational design was judged most appropriate in this thesis.

Sample

The target population in this quantitative study consisted of Division 1 and Division 3 (former mental health nurses) registered nurses who were currently working in Australian health care institutions. Division 1 and 3 nurses are accountable for all aspects of patient care including management of care, counselling, health promotion and patient education, and they are bound by ethical obligations to patients and professional development as nurses (Australian Nursing Council, Inc., 1999). Nurses working in midwifery, perioperative nursing, outpatient departments and nursing homes were excluded because their roles and characteristics of their working environment could be quite different from those of other nurses. In addition, nurses who had not completed a 3-year nursing diploma or degree course (i.e., other divisions of registered nurses) were excluded in this study as they might have different views about their images, roles and work environment due to different educational backgrounds and different roles assigned to them. Nurses who satisfied the above selection criteria were purposively sampled.

The accessible population comprised nurses working in one metropolitan and one rural hospital in the State of Victoria. In addition, nurses undertaking either postgraduate diploma or certificate courses in a school of nursing in one university in Victoria were also involved in this study. This was because those student nurses had diverse hospital/clinical backgrounds, which were believed to enhance representativeness of the sample. Of them, 943 nurses (584 from the metropolitan
hospital, 200 from the rural hospital, and 159 from the university population) were invited to participate in this quantitative study.

A minimum of 300 participants were sought for factor analysis (Tabachnick & Fidell, 2001). Having 300 participants enabled this study to detect relatively small $R^2$ change of 5% in testing the hypotheses using hierarchical regression analysis, when the alpha level is set at .05 and the power at 80% (Cohen et al, 2003). A large number of the questionnaires were distributed to potential participants to achieve this figure, as a low response rate was expected due to a length of time required to complete the questionnaire.

Data Collection Instruments

The following six instruments were adopted to elicit responses that answered the study questions and hypotheses. These instruments were the Porter Nursing Image Scale, the Nurses’ Role Conception Scale, the Work Value Scale, the Collective Self-esteem Scale, the Task Performance Scale, and the Withdrawal Cognition Scale. The descriptions of the instruments are provided. It should be noted that the items in the instruments were presented in random order in the questionnaire and some items were reversed to avoid a response set. All the instruments were modified for the purposes of this thesis. The rating systems were adjusted to a 6-point Likert type scale for consistency except for the demographic questionnaire. A Likert type scale is considered to measure variables which fall between ordinal and interval levels, as the scale may not have precise interval properties (Harris, 1995, Tabachnick & Fidell, 2001). This is natural since the Likert scale is designed to measure individuals’ attitudes and cognition, which are based on their subjective judgments, thus it is difficult to observe/measure objectively. This type of scale was chosen in this thesis because it allows individuals to express their thoughts, perceptions and interpretations of selves and phenomena, which are the main concerns of the thesis. Yet, it is assumed that a distance between one point to the next (e.g., strongly agree to agree somewhat) has a fairly close relationship with the spacing between other two continuous points (Harris, 1995). The Likert scale also provides scores at the interval levels when the scores are added up at a factor or an entire instrument level (e.g., the scores vary from 10 to 50 when a 5-point Likert scale is used for an instrument comprising ten items). Therefore, a Likert scale is treated as if it is a continuous scale in practice (Cohen et al., 2003; Harris, 1995, Tabachnick & Fidell, 2001). In addition,
it is considered that the type of the measurement is not so important for the
application of regression analysis as the distribution of the variables (Tabachnick &
Fidell, 2001).

**Demographic Characteristics**

The demographic questionnaire was used to identify the subject’s background
characteristics such as age, gender, working status, the length of clinical experience,
educational background, clinical speciality and hospital characteristics. The purpose
of this section of the questionnaire was to illustrate representativeness of the sample
in comparison with the population of interest. This information was also necessary to
control effects of the subject’s characteristics that might possibly influence the study
findings. In addition, some demographic factors including the length of clinical
experience and clinical speciality were directly related to the study hypotheses, thus
obtaining such information was essential for this thesis.

**Porter Nursing Image Scale**

This scale was developed by Porter and Porter (1991) to measure nurses’ self-
image/self-concept. Nurses were told to use this scale to rate the items according to
the image they held of themselves. The same scale was also used to measure the
perceived public image of nurses. In this case, participants were instructed to rate the
items in terms of how they thought the public saw nurses.

The original Porters’ scale consists of 30 matched-pair, bipolar adjectives (an
example of the items is leader-follower), which are sub-grouped into three factors:
interpersonal power, interpersonal relations, and intrapersonal ability. The
interpersonal power factor has thirteen items and assesses the professional aspects of
nurses such as leadership, independence and scientific aptitude. The interpersonal
relations factor has ten items and measures caring attitudes and interactive aspects of
nurses. Finally, the items in the intrapersonal ability factor consist of seven items and
are concerned with the rationality of nurses. The original scale is rated by a 7-point
semantic differential scale. Evidence of reliability for the scale has been reported from
.57 to .88 (Porter & Porter, 1991). Support for the validity of the scale has also been
established by a panel of experts in nursing practice and education, as well as by
This thesis has employed a shortened version of the Porter Nursing Image Scale prepared for this quantitative study. The items, whose descriptions are synonymous to others within the same factor and carry lower factor loadings in the original study, were deleted by consulting a thesaurus. This was conducted to control a number of items involved in this questionnaire. By eliminating synonymous items, it was also hoped it could reduce the likelihood of encountering high correlation between the items (presence of multicollinearity), which violates the assumption of factor analysis that was used to re-validate the scale for this study sample. The shortened version comprises twenty-two single/unipolar adjective items. Eight items were extracted from the adjectives presented in the left column of the original interpersonal power items, which represent positive images of nurses such as being leaders. In the same way, seven and five items were extracted from the left column of the original interpersonal relations and intrapersonal ability items respectively. In addition, two adjective items that are presented in the right column of the original interpersonal power items (the adjectives presented in this column represent negative images of nurses such as being followers) were added to the scale as reversed items. This was to check whether or not responses to these items were attributable to a response set. This modified scale was rated by a 6-point Likert scale. Thus, the higher scores indicated more professionally oriented self-concept.

*Nurses’ Role Conception Scale*

This scale was designed to measure nurses’ conception of their decision-making and patient care role based on the combination of the Jefferson Survey of Attitudes Toward Physician-Nurse Collaboration (Hojat et al., 1999) and the Staff Nurse Role Conception Inventory (Taunton, 1984). These two types of nursing roles were selected for this study, because patient care is the primary role for nursing, and decision-making requires knowledge and competence, which represent important attributes of a profession and which the nursing profession has attempted to convey to the public (Huffstutler et al., 1998).

The instrument consisted of two factors: the decision-making factor and patient care factor, each of which contained six items. The items for the decision-making factor were derived from the Jefferson Survey of Attitudes Toward Physician-Nurse Collaboration (Hojat et al., 1999) and the Staff Nurse Role Conception Inventory (Taunton, 1984). These items were intended to assess nurses’ conception of
decision-making concerning patient care and hospital policies affecting their work environment. Four items were extracted from the Jefferson Survey, whose alpha coefficient reliability has been reported as .85 and the construct validity has been established by factor analysis (Hojat et al., 1999). Two other items were derived from the autonomy factor of the Staff Nurse Role Conception Inventory. The Cronbach’s alpha for this factor has ranged from .49 to .62 (Taunton, 1984), and the construct validity has been established by factor analysis, a panel of experts and by correlation with another compatible measure (Taunton, 1984; Taunton & Otteman, 1986).

The items for patient care factor were derived from the patient services factor of the Staff Nurse Role Conception Inventory. This factor was intended to measure how strongly nurses were oriented to or desire to engage in patient care. The original factor for patient services in the Role Conception Inventory has reported reliability of .63 to .69 (Kuder-Richardson reliability), but it is lower for new graduate nurses with ≤ 3 months of clinical experience (Boyle et al., 1996). The validity has been confirmed by factor analysis and a panel of experts (Taunton, 1984; Taunton & Otteman, 1986).

Some original items were reworded in accordance with the purposes of the thesis and an Australian audience. For example, one item from the Jefferson Survey “Physicians and nurses should contribute to decisions regarding the hospital discharge of patients” (Hojat et al., 1999, p. 214) was modified to “I think that as a nurse, I should contribute to decisions regarding the hospital discharge of patients”, as the aim of this item was to measure nurses’ role conception. For another example, the item from the autonomy factor of the Role Conception Inventory “Patient’s nursing care plans should be derived from nursing care” (Taunton, 1984, p. 45) was reworded as “I think that as a nurse, I should develop the patient’s nursing care plan based on nursing diagnoses” in order to assess nurses’ desire and expectation in their decision-making roles inherent in the patient care. The items were rated using a Likert scale ranging from 1= strongly disagree to 6 = strongly agree. Therefore, high scores indicated nurses’ having a strong desire to engage in those roles.

The same scale was used to measure how nurses perceive their roles in actual work situation. Thus, comparison of nurses’ desired roles (role conception) and their perception of the actual roles assigned was possible.
Work Value Scale

This scale was developed by Manhardt (1972) to measure 25 dimensions of work values held between genders. In this thesis, the scale was used twice to compare nurses’ work values (i.e., nurses’ desire to receive intrinsic and extrinsic rewards for their professional practice) with their perception of the environmental supplies in the health care environment. This scale was adopted in this thesis, despite its age, because the scale is relatively short compared to other compatible instruments, yet it includes representative dimensions of the work environment that meet the interest and needs of this thesis.

The Cronbach’s alpha reliability of .90 has been reported (Abu-Saad & Isralowitz, 1997), and the scale is categorised into three factors by factor analysis (Manhardt, 1972). The initial factor analysis conducted by Manhardt excluded four items which carried factor loading of less than .40. However, the full version of the instrument has been utilised in other studies (e.g., Abu-Saad & Isralowitz, 1997; Beutell & Brenner, 1986). The first factor is concerned with long-range career objectives. The items included in this factor measure opportunities for career advancement, supervising others, working on important problems, taking risks, earning high income and being respected by others. The second factor includes items associated with comfortable working environment and interpersonal relationships. The third factor is concerned with intrinsic job characteristics such as provision of autonomy, job variety, intellectual stimulation, feeling of accomplishment and opportunity for knowledge development, and allowance for being creative and developing own working methods.

The current study adopted 22 items out of 25 items in the original scale. Three items excluded were related to having ample leisure time, supervising others, and satisfying cultural and aesthetic interests. These three items were excluded because: (1) provision of leisure time was not a concern for the thesis and it was unlikely that nurses received ample leisure time off the job because of the current nursing shortage, (2) not all nurses were responsible for supervising others, and (3) description of cultural and aesthetic interests might confuse the subjects due to their ambiguous terms. The remaining items were rated with a Likert scale ranging from 1 = strongly disagree to 6 = strongly agree. Thus, the higher scores indicated nurses’ strong desire
to satisfy their professional work values as well as their perception of the environment providing a high amount of intrinsic and extrinsic rewards.

*Collective Self-esteem Scale*

This scale was developed by Luhtanen and Crocker (1992) to measure the degree of collective self-esteem. This scale was adopted in this thesis to test the effect of nurses’ collective self-esteem on their perceptions/interpretations of nursing image, roles and their environment.

The original scale consisted of four factors: membership, private and public collective self-esteem, and importance to identity. Membership collective self-esteem items measure how good or worthy a person thinks s/he is as a member of her/his social group. Private collective self-esteem items assess one’s personal judgements of how good one’s social groups are, while public collective self-esteem items measure one’s judgements of how other people evaluate one’s social groups. Importance to identity items assess the importance of one’s social group memberships to one’s self-concept (Luhtanen & Crocker, 1992). A reliability of the total scale has ranged from .85 to .88. Evidence of validity has been reported by confirmatory factor analysis and correlation with other similar instruments that measure self-esteem (Luhtanen & Crocker, 1992).

This thesis utilised only one factor from the Collective Self-esteem Scale, which was the membership factor. This was because this thesis postulated that nurses who felt worthy of (or confident in) themselves in their professional group would be more motivated to act in a self-enhancing manner in perceiving the public image of them, their actual roles and work environment. The internal consistency of this factor has ranged from .73 to .80, and the 6-week test-retest reliability has been reported to be .58 (Luhtanen & Crocker, 1992). These items were rated by a 6-point Likert scale (1= strongly disagree to 6 = strongly agree). Thus, higher scores indicated a high collective self-esteem.

*Task Performance Scale*

This scale has been designed to assess task-based performance of employees in organisations and was based on an organisational appraisal form used in a major Midwestern manufacturing organisation in the USA (Goodman & Svyantek, 1999). This scale was used in this thesis to measure nurses’ job performance.
The original scale consisted of nine general statements that described how well employees meet set criteria and expectations of organisations in carrying out assigned tasks with responsibility, expertise and effectiveness. The reliability of .93 (internal consistency) has been reported and the validity has been established by factor analysis.

The original statements in the above scale were reworded in a way that was suitable for all the nurses with various positions and level. For example, the original item “I achieve the objectives of the job required” was reworded as “I achieve the objectives of the job required of me”. The modified items were rated by participants using a Likert scale with 6 indicating the strongest agreement on high task performance and 1 indicating the strongest disagreement.

**Modified Withdrawal Cognitions Scale**

This scale was based on a three-item Withdrawal Cognitions Scale, which measures turnover cognition in three factors (i.e., thinking of quitting, searching for a job, and intention to quit), developed by Mowday, Koberg and MacArthur (1984). This instrument was adopted in this thesis to measure nurses’ turnover intention.

The constructs of the original Withdrawal Cognitions Scale are based on a theoretical framework, which illustrates turnover process, developed by Mobley, Horner and Hollingsworth (1978). The same constructs have been used in many turnover studies and instruments (Bozeman & Perrewé, 2001; Mobley et al.; Sager et al., 1998). The reliability of the scale has been reported as .70 for a hospital sample (Mowday et al., 1984).

The original three items in the Withdrawal Cognitions Scale were modified to measure two different occasions of nurses' turnover intention: leaving organisations to look for another nursing job (an example of the items is “All things considered, I would like to find a nursing job in a different organisation”) and leaving nursing per se (an example of the items is “All things considered, I would like to find a non-nursing job”) with each factor consisting of three items. The item for intention to quit was also modified in a way that could be rated by a Likert scale, as the original study conducted by Mowday et al. used a nominal scale. The modified items were rated by a 6-point Likert scale with the higher score indicating strong turnover intention.
It should be noted that all instruments were developed outside Australia. Moreover, these instruments were modified for this thesis. Thus, the original validity and reliability of the instruments were likely to change. To re-establish the usefulness of the instruments, validity and applicability checks for the modified instruments were conducted through a content validity exercise and a pilot study prior to administering the questionnaire to the main study sample. In addition, factor analysis and estimation of Cronbach’s alpha were conducted to further test and refine the instrumental reliability and validity following data collection.

**Judgemental Panel Review (Content Validity Exercise)**

Before distributing the questionnaire, judgemental panel review was conducted to test the content-validity and clarity of the modified instruments. This review involved six nursing experts who had research experience in the areas of nursing image and practice or who had experience in instrument development (see detail descriptions of the experts in Appendix A). These experts were asked to examine the relevance of the content of the questionnaire, at both item and instrument levels, to the study objectives using a 4-point scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = very relevant) (Lynn, 1986) (see Appendix B). Nursing experts were also asked to identify areas/items that are omitted in an instrument, as suggested by Lynn (1986). Content validity was examined by an index of content validity (CVI), which was produced by calculating the level of agreement on items/instruments. Ratings of 3 and 4 were considered as agreement on the validity (Waltz & Bausell, 1981; Waltz, Strickland & Lenz, 1984). A CVI of greater than 83% was necessary to establish the content validity of the instruments (Lynn, 1986).

The results of the CVI showed that all the instruments as a whole were considered as relevant to the research purposes. As to the item level, however, two items in the interpersonal power factor of the Porter Nursing Image Scale were eliminated from the questionnaire, as they did not reach the CVI of 83%. These items were “Bold” and “Scientific”. In addition to the elimination of the two items, the following items were modified in accordance with the suggestions made by multiple examiners, although these items reached the CVI of 83% or more. One of the items is “controlled” in the intrapersonal ability factor of the Porter Nursing Image Scale, and this was modified to “in control” to reflect a more positive meaning of nurses’ image. Another item was in the decision-making factor of the Nurses’ Role Conception Scale,
“I should develop the patient’s nursing care plan based on nursing diagnoses.”, which was modified to “I should be responsible for developing a patient nursing care plan in collaboration with other health professionals.”. This was because a nursing care plan might not be developed solely from nursing diagnoses, especially in acute settings where clinical pathways have a profound impact on the course of nursing interventions. Furthermore, three items in the patient care factor of the Nurses’ Role Conception Scale (items 2 to 4 in Section B-2 of the Attachment B in Appendix B) were modified in ways that could provide clearer meanings. For example, item 2: “I should not assign others to assist patients with activities of daily living.” was changed to: “I should not delegate division two nurses or nurse aids to assist patients with activities of daily living”. In this way, the meaning of “others” in the original item could convey a clearer meaning. The similar modifications were made on the item 3 of “ancillary personnel” and the item 4 of “other personnel”. As to the Work Value Scale, the item: “It is important to me to have a job or work environment that does not give me the responsibility for taking risks. (Reversed item)” was modified to: “It is important to me to have a job or work environment that does not give me the responsibility for challenging current clinical practices”. The latter wording could provide a clearer meaning of “risks” to nurses. The item: “It is important to me to have a job or work environment that permits advancement to high administrative responsibility.” was also changed to: “It is important to me to have a job or work environment that permits advancement to higher duties in a leadership role”. This was because “administrative responsibility” might limit responses by clinicians. Lastly, the item: “I often feel I am a useless member of the nursing profession. (Reversed item)” in the Collective Self-esteem Scale was changed to: “I often feel I do not contribute sufficiently to the nursing profession.” for a more appropriate expression.

As to the areas, which were identified as being overlooked in the questionnaire, the examiners provided a few suggestions on each instrument. However, none of the suggestions were shared by other examiners. Thus, these suggestions were not used to create new items, which might be otherwise disagreed with by other examiners.

**Pilot study**

Following the content validity exercise, the questionnaire was administered to 18 nurses who were undertaking a unit of the Master of Nursing course at a university. These nurses were not involved in the main study. The purpose of the pilot
study was to refine the questionnaire. In particular, the pilot study was used to pre-test the clarity of the items (questions) used in the questionnaire, their applicability to current nursing practice and the time required to answer the questionnaire (Jacobson, 1997; Lackey & Wingate, 1998). The pilot study was also utilised to assess the feasibility of the data collection procedures (Lackey & Wingate, 1998).

Of 18 nurses, 11 nurses were recruited from one class and 7 nurses were recruited from another class where 5 nurses attended the class and 2 more nurses, who were absent from the class at the time, received the survey packages through those who attended. With the permission from the subject co-ordinator, the student researcher explained the purpose and the procedures of the study to the nurses, and distributed the questionnaires (Note. The questionnaire used in the pilot study was not included in Appendices. Overall structure of the pilot questionnaire is identical to the final version of the questionnaire, which appears in Appendix C), cover letters (Appendix D) and pilot study evaluation form (Appendix E) at the end of the class. The nurses were instructed to read the cover letter first, then complete the questionnaire and evaluation form. To return the survey, they were given choices of either completing the questionnaires and evaluation forms in the classroom and returning them into a box provided, or completing the survey later and returning them using a reply-paid envelope provided. A co-researcher assisted with the data collection and ensured that the correct procedures were followed. All the nurses were assured that their decision to participate in this pilot study was voluntary and any decision to not participate in the study would not affect them as students in the university.

It should be noted that the copyright holders of the instruments used in the questionnaire were informed that the instruments would be modified following the pilot study. Where requested, modified instruments were submitted to the copyright holders and the permission for the modifications were sought.

A total of 16 surveys were returned, which accounted for an 89% response rate. One of the pilot study evaluation forms was excluded from the analysis, as the responses were considered to be affected by a response set. In addition, a few participants did not answer all the questions either in the questionnaire or in the pilot evaluation form. In these questionnaires, the responses provided by them were used in the analysis. Therefore, the sample sizes varied from 13 to 16. These sample sizes
were considered appropriate for a pilot study (Nieswiadomy 1993; Polit & Hungler, 1999).

The summary results of the questionnaire and the pilot evaluation form have been presented in Appendix F. The analysis on the evaluation of the questionnaire revealed the following. Nearly 87% of the participants answered that the questionnaire could be completed within 30 minutes, and 73% rated the time required was not considered too much. More than 90% of participants reported that the questionnaire was relatively easy to answer. This response might result from the utilisation of the consistent rating system throughout the questionnaire and the provision of an answer box. Most participants also rated that the layout of the questionnaire was considered good. As for the content of the questionnaire, all the participants agreed or somewhat agreed that the questions reflected what they meant to measure. Nearly 87% of participants answered that the question items also reflected current nursing practice. Regarding the meanings of the questions, however, only 66.7% of participants strongly agreed or agreed somewhat that their meanings were clear. While some participants provided general comments on the clarity of the questions such as “the meanings of some of the questions are not clear”, which was difficult to modify, a few participants commented on specific items. Therefore, these items were reviewed and the decision to modify the items was made with the student’s supervisor as follows. First, some of the reversed (negatively worded) questions were reviewed and then reversed back to the original positive statements. This was because a participant commented that some negatively worded questions in Section C/D and Section E were confusing. Second, Section E was changed to measure only nurses’ desirability of the job/work environmental characteristics listed in the questionnaire. This was because the previous Section E asked participants to rate how important, desirable or valuable these work/environmental factors were to them, and this multiple instruction confused the participants. In fact, one participant commented that Section E was confusing as her response could be different according to which one of them she was asked to rate. Third, the layout of Section A to F was modified. This was because a few participants found that Section C/D and E/F were difficult to answer, which was partly due to similar items asking two different questions in terms of their ideal and actual nursing practice. One participant particularly commented that she needed to keep going back to read the instruction in
order to check what she was asked to rate. To clarify the purposes of Section A to F, therefore, another column indicating the summary instruction of each Section was added on the right hand side of question items as a sign post. Moreover, the font size of the instructions was made larger for ease of reading. In addition, a sentence, which asks participants to read the instructions before commencing answering the questions, was inserted into each section of the questionnaire. Lastly, an additional column to write down the participants’ clinical position was added to question 8 of the demographic section (Section J), as a few participants circled multiple numbers.

As to the responses to the questionnaire, the descriptive statistics showed two findings that needed attention. The first finding was related to the questions in the patient care factor of the Nursing Role Conception Scale. Questions 3 and 7, in this scale, were supposed to elicit how strongly nurses were oriented to patient care in the area of patient daily activities and personal hygiene measures. However, many participants expressed that they should not engage in these tasks and these tasks should be delegated to other personnel including Division 2 nurses or nurse aids ($M = 2.38$ for both daily activities and hygiene measures. The score ranged from 1 to 6.). A similar result was obtained for question 9, which asked their desirability for direct patient care. The mean score for this question was slightly above the scale mid-point ($M = 3.94$). These results contrasted the scores of three other questions, which were also meant to measure their orientation to patient care involving technical procedures, patient education and emotional support (the means ranged from 4.56 to 5.44). Due to low scores on the questions relating to assisting patients’ daily activities and hygiene and engaging in direct patient care, the mean score of the ideal patient care role factor fell to 3.94. This is much lower than the mean score for the ideal decision-making role factor ($M = 5.16$). It is uncertain whether they are not oriented to basic patient care or their response may simply result from what their job/role descriptions as Division 1 and 3 registered nurses designate them to do (or what they are taught Division 2 and nurse aids are supposed to do to assist patient daily living). The results of the pilot study suggest that these three items may show a separate factorial solution (for example, delegation of basic patient care) from other patient care items, if the same results are obtained in the main study. As the pilot study involved a small sample size, these items were retained in the questionnaire until the results of the factor analysis was obtained in the main study.
The second finding was related to use of the contrasting items (i.e., weak vs. powerful and followers vs. leaders) in the Porter Nursing Image Scale. Two negative items were added to the questionnaire to check if the responses were attributable to response set. The descriptive statistics showed that the participants generally rated these items in a contrasting manner, which indicated that these reversed items were functioning as expected. However, the descriptive statistics in the nurses’ perceptions of their public image showed that the participants rated both “powerful” and “weak” items in a similar fashion. That is, they saw the public see them as not being weak ($M = 2.94$) as well as not being powerful ($M = 3.06$). This result could be attributable to ambiguous meanings of the word “weak”. In the original Porter Nursing Image Scale, this word is matched up with “powerful” as a contrasting word. Therefore, the meaning of “weak” is clear to participants that this indicates power relationship/status. However, when “weak” is separated from “powerful”, the first word can be interpreted in many ways including physical, psychological and emotional weaknesses. In fact, The Concise Macquarie Dictionary (1986) identified 17 separate meanings of the word “weak”. To avoid confusion, therefore, “weak” was eliminated from the questionnaire. This change meant the total number of the items in the Porter Nursing Image Scale was 19.

**Procedure for Data Collection**

Following the content validity exercise and the pilot study, the modified questionnaire was distributed to 943 nurses. The data collection took place between April and June, 2003. As the quantitative study involved both student nurses and hospital employees, who were recruited in different procedures, the data collection procedures for these groups are specified separately.

**Procedures for the Hospital Sample**

First, nurse unit managers (NUMs) were informed of the purposes of the quantitative study and distribution of the questionnaires to their nursing staff by mail. Then, the student researcher and the supervisor visited the NUMs and asked for cooperation to collect data by explaining the procedures of the study. The NUMs were asked to randomly select permanent Division 1 or 3 registered nurses from the roster, and distribute the cover letter (see Appendix G for an example of the main study cover letter) and the modified questionnaire (see the final version in Appendix C) to
nurses with encouragement to promptly return it to the researcher. When the NUM was not present on a ward, an acting NUM or a charge nurse was contacted instead. The participants were asked to complete the questionnaire and place it in a provided reply-paid envelope upon completion. The participants were also asked not to write their names on the questionnaire, assuring their anonymity. However, they were instructed to retain the code number randomly allocated to each cover letter. This enabled the researcher to delete data from analysis if the participants decided to withdraw from the study at a later stage. In reality, no one withdrew from the study. A reminder and thank you card were personally delivered to each ward to enhance the response rate 4 weeks after distribution of the questionnaires. The reminder card included statements which expressed thanks to respondents and encouragement to those who had not returned the questionnaires. The participants were also instructed to contact the researcher in the case that misplacement of the questionnaire caused a problem responding to the study (Dillman, 1978). Survey return was assumed as consent to participate in this study. A total of 6 weeks was allocated for the survey’s return.

Procedure for the University Sample

For the university sample, a letter seeking permission to access students at a mutually agreed time was sent to the Head of School and the Chair of the School Human Ethics Advisory Group, and their permission was obtained. Then, the student researcher visited each classroom with permission from the subject co-ordinators, and distributed the invitation letter and questionnaire after an oral explanation. The student supervisor assisted with data collection whenever possible. The students were given the opportunity to complete the questionnaire in the class and place it into a sealed box provided in the classroom. The students were also allowed to complete the questionnaires later and return them using a reply-paid envelope provided. Consistent with the hospital sample, the students were instructed not to put their names on the questionnaire and retain the code number randomly allocated to each cover letter. An oral reminder was also given to the university sample in the classrooms 4 weeks after the distribution of the questionnaires. This opportunity was also taken to recruit more participants, who were absent from the class at the time of the initial questionnaire distribution. A total of 6 weeks were allocated for the survey’s return. No students withdrew from the study at the later stage.
Data Management

All questionnaires returned to the student researcher were kept in a locked cabinet in the School of Nursing. Usable data were coded, and then entered into a computer database to make a spreadsheet on which subsequent statistical analyses were conducted. The softwares used for the analysis were SPSS version 11.5 (2002). Three- and two-dimensional figures were crested by Excel (2002) and Maple V (1997).

A small number of participants did not answer all the questions in the questionnaire. When there were a few non-responses in a given section, those responses were treated as missing values. None of the Sections from A to I (see Appendix C for the questionnaire) had missing values of greater than 5% in its frequency. Moreover, Little MCAR test showed a random appearance of those missing values across the questions in each section. Hence, they were replaced with imputed values based on the Expectation Maximisation (EM) method. EM method is considered as a sophisticated procedure to estimate realistic values for those missing, as it “forms a missing data correlation (or covariance) matrix by assuming the shape of a distribution (such as normal) for partially missing data and basing inferences about missing values on the likelihood under that distribution” (Tabachnick & Fidell, 2001, p. 63). However, cases with missing values in Section J (i.e., the demographic section) were deleted casewise in analysis, as there is no available procedure to estimate nominal values. Moreover, when one or two entire sections of the questionnaire were not completed, the responses in these sections were treated as system missing and only the rest of the sections were used for analysis. When several sections were not answered, those questionnaires were removed from analysis.

Data Analysis

The response rate was calculated first. Next, demographic data were analysed by comparing the study sample with the Australian national data set based on recent publication of “Nursing Labour Force 2001” (2003). A sample t-test and Chi-test were used for this analysis. Then, data analysis proceeded using three phases. First, the validity and reliability of each instrument were established using exploratory factor analysis and calculating Cronbach’s alpha coefficient. Second, the descriptive data of all the variables were computed and presented. Finally, the hypotheses were
tested using multiple regression analysis, t-test and response surface analysis. The hypothesis testing was done after consultation with Associate Professor Ian Gordon from the Statistical Consulting Centre at The University of Melbourne. The Distinguished Professor of Management Jeffrey R. Edwards from the University of North Carolina was also contacted to seek assistance to test hypothesis 8 and 9.

**Testing Validities and Reliabilities of the Instruments**

**Factor Analysis**

To establish the construct validity of the instruments, this thesis used exploratory factor analysis rather than confirmatory factor analysis. This was because all instruments were modified for the study purposes and for an Australian sample, hence, the modified instruments were likely to result in different factorial solutions from the original instrument constructs. It was, therefore, considered more plausible to re-analyse the instruments in order to explore their constructs that offer more meaningful solutions to the current study sample.

For exploratory factor analysis, principal-axis factor analysis with orthogonal (varimax) rotation was selected. Principal-axis factor analysis emphasises communality, which is a measure of a total variance each item shares in all the factors extracted (and other items), and does not count unique variance of an instrument and error variance (Polit, 1996). Thus, contribution of each item to an instrument is observable without contamination by error (Tabachnick & Fidell, 2001). The orthogonal rotation was chosen for factor rotation because each factor was supposed to measure distinct dimensions of a variable.

Prior to execution of the factor analysis, the assumptions for this analysis were examined as described below.

1. Normality: Normal distribution of responses in each item enhances factorial solution. However, exploratory factor analysis is robust to this assumption (Coakes & Steed, 1999; Tabachnick & Fidell, 2001). Thus, data transformation was not considered at this stage even though the violation of this assumption had been detected as a result of exploratory descriptive analyses (e.g., histogram, stem and leaf plots,
boxplots, normal probability plots, central tendency, Kulmogorov-
Smirnov test and Kurtosis test).

2. Linearity: Factor analysis assumes that all the relationships between
items in an instrument are linear (Coakes & Steed, 1999; Tabachnick
& Fidell, 2001). Yet, testing each relationship of items with a large
sample size was not practical, therefore, a spot check on a few
relationships using scatterplots was conducted with paired variables,
which might show nonlinear relationships on the basis of response
distribution skewness (Tabachnick & Fidell, 2001).

3. Outliers among cases: As factor analysis is sensitive to both univariate
and multivariate outliers (Coakes & Steed, 1999; Tabachnick & Fidell,
2001), a search for both outliers was conducted. First, univariate
outliers were examined by exploratory descriptive analysis. As some
univariate outliers are likely to appear as multivariate outliers as well,
multivariate outliers were examined next and deleted before treating
univariate variables outliers (Tabachnick & Fidell, 2001). Multivariate
outliers were screened with Mahalanobis distance with the significance
level set at a greater than .001 in a Chi-square table (Tabachnick &
Fidell, 2001).

4. Factorability of the correlation matrix: To test if data was eligible for
factor analysis, several tests were run. First of all, the correlation
matrix was used to see if the pair wise relationships of items exceeded
.3. Second, measure of sampling adequacy was examined by looking at
an anti-image correlation matrix and by examining if the variables
exceeded the acceptable level of .5. Finally, the Kaiser-Meyer-Olkin
(KMO) test and Bartlett’s test of sphericity were conducted to see if
KMO measure was greater than .6 and the Bartlesst’s test result was
significant, suggesting the factorability (Coakes & Steed, 1999).

5. Multicollinearity and singularity: For principal-axis factor analysis,
absence of multicollinearity (i.e., high correlation between variables)
and singularity (i.e., exact match between variables) must be satisfied
(Coakes & Steed, 1999; Tabachnick & Fidell, 2001). To check these
assumptions, squared multiple correlations (SMCs) were examined to see if any variables whose SMCs scores did not indicate 1 or close to 1.

6. Outliers among the variables: Outliers among the variables (that is, items which are not correlated to other items) were screened by checking SMCs (Coakes & Steed, 1999; Tabachnick & Fidell, 2001).

In addition to assumption testing, preliminary factor analysis was conducted to determine a number of factors to be extracted. In this analysis, scree plot and the number of the factors whose eigenvalue was greater than one were examined. Then, the final analysis was carried out by entering the number of factors to be extracted and by rotating factors using varimax rotation. The items with the factor loadings (i.e., correlations between items and factors) of < .4 were removed from the instrument. The cut-off point of approximately .4 was also used by the authors of the original instruments, thus maintaining the consistency of the validity establishment exercise. The final factorial solutions were retained for the further analyses including the hypothesis testing.

A slightly different factor extraction approach was made to the Nursing Image Scale, Nurses’ Role Conception Scale and Work Value Scale, which were used twice to compare two different variables (e.g., the Nursing Image Scale was used to compare nurses’ self-concept with the perceived public image of nurses). In this approach, exploratory factor analysis was conducted by pooling the cases of compared variables. For example, the responses of nurses’ self-concept and those of perceived public image of nurses were pooled together. To identify each variable, dummy codes were assigned to each variable (i.e., Nurses’ self-concept = 0, the perceived public image of nurses = 1) as a variable identifier, and this identifier was included in the combined data. Then, the factor analysis was run to obtain a factorial solution for these combined variables (Levine, 1977). The loadings of the variable identifier indicated “those factors, assumed to exist in both groups [in this context, “groups” mean compared variables], on which the variables are most discriminated, therefore, the factors for which the groups’ [variables’] mean factor scores would be most different” (Levine, 1977, p.43). The final factor solution was extracted from the combined cases without variable identifier, as the inclusion of the identifier as a variable might influence factor structure as well as its explained variance (Levine,
While this approach provides information regarding the similarity and differences of response distributions between the compared variables, it does not offer separate factor solutions for the variables. It, rather, provides a single factor solution assumed to be shared between these two variables. This approach seems to be appropriate for this thesis, as person-environment fit researchers always assume that these compared variables share the same factor structure. This assumption is plausible as the same instrument was used to compare both persons’ needs and their occupational/environmental factors.

**Reliability Testing**

After factors were extracted, reliability of all instruments as well as their factors were analysed. For the present study, internal consistency was computed by Cronbach’s alpha. Correlation coefficients greater than .70 were considered good (Polit & Hungler, 1991).

**Descriptive Statistics**

First, the means and standard deviations of all the variables were reported. Then, Pearson correlation products for all the pair-wise relationships between the variables were calculated. The results of the Pearson correlation product were used to identify suppressor variables in multiple regression analysis. Then, hypothesis testing was pursued.

**Hypotheses Testing**

Testing hypotheses required several multiple regression analyses. Hence, the assumptions of regression analysis were examined through preliminary regression analysis. The following assumptions were checked (Cohen et al., 2003; Coakes & Steed, 1999; Polit, 1996; Tabachnick & Fidell, 2001).

1. Normality, linearity, and homoscedasticity of residuals: This assumption was checked through the examination of standardised residual plots in each regression analysis. A histogram and P-P plot of the residuals and the scatterplot of the residuals against standardised predicted values were examined to check this assumption.

2. Absence of outliers: Regression analysis is sensitive to outliers. Univariate outliers in each variable were screened for through
inspection of stem-and-leaf plot, box-plot and z-scores of the variables. Multivariate outliers were screened by checking extreme, discrepancy and influential cases. As for the extreme cases among independent variables, Mahalanobis distance was examined (Tabachnick & Fidell, 2001). Influential points were screened by Cook’s distance with the cut-off point of 1 (Cohen et al., 2003). In addition, residual outliers (discrepancy cases) were screened using residual casewise diagnosis in SPSS 11.5. Residual outliers were defined as those falling outside the range of ±3 standardised residuals (Coakes & Steed, 1999). Detection of these outliers was conducted as an initial step, and these extreme, discrepant and influential cases were eliminated from the data, rather than transforming it to reduce their effects. This is because transformation of the data makes interpretation of the results difficult, especially when the results are compared between groups in hypotheses 4 to 7 and when the relationships between nurses’ needs and the environmental factors are examined in hypotheses 8 and 9. Moreover, data transformation may overshadow the possibilities that relationships are actually curvilinear in hypotheses 8 and 9. As the elimination of cases reduces the generalisability of the thesis findings, the nature of the outlying cases and the results of the analysis with all the cases included are also presented in Appendix H and I respectively, as suggested by Cohen et al. (2003). However, the results of the factor-level analysis were not included in these appendices.

3. Absence of multicollinearity and singularity: The presence of multicollinearity does not affect the prediction of a dependent variable or the values of $R^2$. However, it makes the estimate of regression coefficients unreliable, as an independent variable that is highly correlated with other predictors, contribute little unique information to estimating the value of a dependent variable. The presence of multicollinearity also results in estimating large standard errors of regression coefficients, which make the coefficient insignificant (Cohen et al., 2003). Multicollinearity and singularity were examined through tolerance scores, VIF and condition index. The tolerance score
below .01, VIF over 10, and the condition index exceeding 30 were considered as an indication of multicollinearity.

For all the subsequent analyses, significance level was set at .05 for a two-tailed test, as both positive and negative relationships between the variables were expected. The hypothesis testing was carried out at a variable level (using scores obtained from an entire instrument) as well as a factor level (using scores obtained from each factor in an instrument). When the test was conducted at a factor level, the significance level was controlled using the Holm’s sequential Bonferroni procedures (Holland & Copenhaver, 1998; Seaman, Levin & Serlin, 1991) to reduce both type I and II errors.

Demographic data of the study sample, which were identified as heterogeneous from the target population or which might affect hypothesised relationships between variables, were held constant in testing hypotheses 1 and 3 to 7. The controlled demographic data were: ‘work status’, ‘age’, ‘clinical specialty’, ‘clinical position’, ‘workplace location’ and ‘experience in university education’. The first five demographic variables were chosen, because the study participants’ characteristics in these aspects are statistically different from those of the Australian national nurse data set (Nursing Labour Force 2001). Removing the effects of these variables, thus, helped to increase the generalisability of the study findings to the target sample. In addition to these variables, the effect, which experience in university education may have on the study findings, was controlled for. Although the comparison between the study participants and the Australian national data set in this area could not be made, it is more likely that the participants in this study are over-represented by university-educated nurses. These six variables are controlled for mainly to enhance the generalisability of the study findings. However, some of the demographic variables such as clinical position, age and work location may also interfere in nurses’ perceptions of their roles and/or the actual environment they are in. For example, nurses working in a metropolitan hospital and a rural hospital may have different views of their public image, as social norms in these areas may be different. In a similar way, NUMs have more access to resources and interpersonal power than staff nurses. Thus, holding these demographic variables constant also helps to identify features of the relationships between the variables of interest more accurately.
Demographic variables were not controlled for in testing hypothesis 2, as it involves a dependent-samples (paired-samples) t-test. Demographic variables were also not controlled in testing hypotheses 8 and 9 in order to reduce type I error (see detailed explanation later in this chapter).

Testing hypothesis 1 and 3

Hypothesis 1: Positive relationships exist between the perceived public image of nurses, nurses’ perception of actual roles and environmental supplies.

Hypothesis 3: Positive relationships exist between nurses’ self-concept, their role conception and work values.

As for the examination of hypotheses 1 and 3, hierarchical regression analysis was used. For example, to test the relationship between nurses’ self-concept (independent variable) and role conception (dependent variable) in hypothesis 3, the scores of the role conception were regressed on those of nurses’ self-concept after controlling for the effects of the demographic variables. In this analysis, the following demographic variables were entered with or without dichotomous dummy codes assigned (Devore & Peck, 1997; Polit, 1996); age, working status (working < 35 hours per week = 0, working ≥ 35 hours per week = 1), clinical position (non-clinical = 0, clinical/both clinical and non-clinical = 1), educational background (not educated in a university = 0, educated in a university (those currently a undertaking university course were include in this category) = 1), practice area (non-critical care = 0, critical care = 1) and location of hospital (rural = 0, metropolitan = 1). If there is a significant increase in $R^2$ (squared multiple correlation coefficient) after entering the scores on nurses’ self-concept, it suggests that nurses’ self-concept is predictive of their role conception.

Testing hypothesis 2

Hypothesis 2: Nurses’ self-concept is more positive than the image they believe the public has of them.

With reference to hypothesis 2, nurses’ self-concept and perceived public image of nurses were compared with a dependent-samples (paired-samples) t-test to see if there was a significant difference between the two. Unlike regression analysis that assumes multivariate normality, a t-test assumes normal distribution of scores in
the population from which the sample arises. However, a t-test (as well as ANOVA) is robust to this assumption, and this study involves a large sample size, with which sampling distribution is likely to be normal (central limit theorem) (Coakes & Steed, 1999; Harris, 1995). Therefore, an examination of the normal distribution of scores for each variable was omitted.

Testing hypothesis 4

Hypothesis 4: The higher nurses’ collective self-esteem is, the greater their perception of the PEO fit of their image, roles and values.

To test this hypothesis, higher and lower collective self-esteem groups were created by extracting cases whose collective self-esteem scores fell higher and lower 30% of the sample, as recommended by Swann (1987). This procedure created a sample size of 101 in each level of collective self-esteem group. Then, two-step analysis was conducted. As the first step of the analysis, the perceived public image of nurses, perceptions of actual roles and environmental supplies were compared between the higher and lower collective self-esteem groups with an independent t-test. This was to see whether the higher collective self-esteem group perceived those variables more favourably than their counterparts. The same procedure was repeated to test the differences in their conceptions of self, roles and work values between the groups. This was to see if the higher collective self-esteem people have developed a more positive self-concept, role conception and work values as a result of internalisation with a favourable feedback on selves. If the hypothesis is supported, nurses with higher collective self-esteem should rate all the above variables more positively than those with lower collective self-esteem.

The second step was carried out to test if nurses with higher collective self-esteem perceived a better PEO fit than those with lower collective self-esteem. Moderated regression analysis was used to examine the moderating effect of collective self-esteem. Here, an example of testing the fit between nurses’ self-concept and perceived public image of nurses in both groups is described.

The regression analysis was preceded by entering demographic variables, group dummy codes, nurses’ self-concept, and interaction terms of the demographic variables and group codes in the first step. These variables were entered as a set to reduce the number of steps required by the analysis, thus reducing type I error. The
second step was followed by entering an interaction term of nurses’ self-concept X the group dummy code. The perceived public image of nurses served as the dependent variable. The first step was to control for the effects of demographic variables, group membership, and nurses’ self-concept. The different effects the demographic variables have on the perception of the public image were also controlled for in this step. However, age was excluded from the demographic variables in order to reduce multicollinearity, as the interaction term of age X the group code was significantly correlated with the group code ($r = .96$). The second step was to test if a level of collective self-esteem would moderate the relationship between nurses’ self-concept and the perceived public image. A significant increase in $R^2$ in this step indicates that regression lines determined separately in the two groups have significantly different slopes. This suggests that the group difference (i.e., the different levels of the collective self-esteem) interacts with the relationship between the nurses’ self-concept and the perceived public image (Cohen et al., 2003). The coefficient on the interaction term in this step also suggests which group of nurses are experiencing a better fit. To have a better understanding of the moderating effect of collective self-esteem, the relationships between nurses’ self-concept and the perceived public image of nurses by the group were plotted, when the second step added a significant increase in the explained variance.

A contrasting code was used for the demographic variables and different levels of collective self-esteem groups. Thus, nurses with higher collective self-esteem were assigned 1 and those with lower collective self-esteem were assigned –1. The demographic variables, which had been assigned 0 in hypotheses 1 and 3, were assigned a coding of –1. This coding enhanced a normality of distribution in the scores of the interaction terms. The scores of nurses’ self-concept, role conception and work values were scale-centred to reduce multicollinearity with interaction terms in the second step.

These procedures were repeated for role and value-supply fit for the both groups.

*Testing hypothesis 5 and 6*

Hypothesis 5: There are no relationships between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and
their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with less clinical experience.

Hypothesis 6: Positive relationships exist between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with a longer clinical experience.

To test hypotheses 5 and 6, nurses were grouped in accordance with their length of clinical practice. It was uncertain how much time would affect nurses’ responses to their environment/occupation. Blegen et al.’s study (1993) reported that role conception difference was evident between nurses with less than 5 years and those with more than 15 years of clinical experience. Based on Blegen et al.’s study, while maintaining the appropriate sample size to conduct regression analysis at the group level, the present thesis categorised nurses with less than 4 and 4 years of clinical experience into one group, and those with 13 and more years of experience into another. This resulted in each group consisting of 108 nurses. An independent t-test was then performed to see if there were significant differences in their conceptions of self, roles and work values, and their perceptions of the public image of them, actual roles and environmental supplies between these two groups. To support the hypotheses, nurses with more years of experience should report a more negative self-concept, role conception and work values than those with less experience.

Next, hierarchical regression analysis by the group was conducted by regressing scores of the nurses’ professional orientation factors (e.g., nurses’ self-concept) on those of the perceived environmental/occupational factors (e.g., the perceived public image) after controlling for the effects of the demographic variables. In this analysis, age was excluded from the demographics, as age and the length of clinical experience were highly correlated ($r = .81$), thus holding age as a constant would subsume the moderating effect of the length of clinical experience on the perception of the PEO fit. Then, the coefficients on the predictor variable (e.g., the perceived public image) were compared between the groups in order to determine the difference in their perception of the PEO fit. If the hypotheses are supported, the coefficient in $\leq 4$ years of experience group should not be significant, suggesting no relationship exists between nurses’ professional orientation and their perceptions of
the environment/occupation. In contrast, the coefficient must be significant for the other group, suggesting that the perceived environmental/occupational characteristics are predictive of the professional orientation of nurses with a longer year of experience. This procedure was repeated for role and value-supply fit.

**Testing hypothesis 7**

Hypothesis 7: Nurses in different clinical areas will report different professional orientations and perceptions of their public image and their environment/occupation. Thus, nurses in different clinical areas will report different degrees of the PEO fit in their image, roles and work values.

To investigate this hypothesis, nurses’ clinical areas were collapsed into four groups. These areas were: medical/surgical care; high dependency care including an emergency department, intensive care unit and coronary care unit (cardiology/cardiac surgery included); long-term care such as oncology, gerontology, palliative and mental health care; and others including paediatric care, day procedures, rehabilitation and non-clinical areas (e.g., education and research). Nurses working in other areas \( (n = 57) \) were excluded from this analysis, as there are no specific clinical features representing this group. Casual nurses and graduate nurses on clinical rotation \( (n = 27) \) were also excluded from this analysis, as they are not affiliated with specific area of nursing. Finally, nurses working in long-term care \( (n = 67) \) were eliminated from the analysis, as their small sample size made it inappropriate to compare their responses with those of other nurses. This left 90 medical/surgical nurses and 115 high dependency care nurses to be compared.

First, an independent t-test was performed to see if there were differences in nurses’ conception of self, roles and work values; and nurses’ perceptions of the public image of nurses, their actual roles and environmental supplies between the groups.

To investigate the moderating effect of the clinical areas on nurses’ perception of the PEO fit, the same moderated regression analysis described in testing hypothesis 4 was used. However, clinical specialty was removed from the demographic variables. Moreover, age was excluded from the demographic variables to be held constant, as the inclusion of the interaction term of age X group caused multicollinearity. A
contrast code of 1 was assigned to high-dependency nurses, and −1 to medical/surgical nurses.

Testing hypothesis 8 and 9

Hypothesis 8: Positive relationships exist between perceived fit in nurses’ image, roles and work values and their job performance.

Hypothesis 9: Negative relationships exist between the perceived fit in their image, roles and work values and nurses’ turnover intention.

Hypotheses 8 and 9 postulated the relationships between the PEO fit and occupational performance. More specifically, they advocated that insufficient and excess reinforcement on nurses’ image, role conception and work values would contribute to decreased job performance and increased turnover intention. Here, curvilinear relationships were assumed. For example, a U relationship was expected for turnover intention and an inverted U relationship for job performance, when the Y axis indicated the occupational performance and the X axis indicated the fit index produced by the scores of environmental/occupational scores minus those of personal scores (see the optimal model in Figure 5.1).

To investigate the effects of the fit on occupational performance and the shapes of the relationships, this thesis followed procedures developed by Edwards (Edwards, 1994, 1996; Edwards & Van Harrison, 1993; Edwards & Parry, 1993). Edwards (1996) identified three models, which explain person-environment relationship. (Note. A term “person-environment fit/relationship” in this section is treated as a concept representing various dimensions of the fit including image, role and value-supply fit investigated in this study.) These are monotonic, asymptotic and optimal models, examples of which are illustrated in Figure 5.1.
Figure 5.1. Examples of three models illustrating the relationships between person-environment fit and occupational performance.

Note. E= Environmental supplies. P= Person’s work values. JP= Job performance. TI= Turnover intention. Solid line describes the relationship between JP and E-P, while dotted line indicates that between TI and E-P.

The monotonic model illustrates a linear relationship between the person-environment fit and occupational performance. For instance, it shows that employees’ job performance is increased when the environmental supplies exceed their work values, but their job performance decreases when their values exceed the environmental supplies. In this model, excess environmental supplies do not decrease employees’ job performance, but increases it. Thus, this model does not accord to contention of person-environment fit theories.

The asymptotic model shows a curvilinear relationship, and suggests that employees’ job performance decreases, for example, when they perceive a lack of environmental supplies. However, excess environmental supplies do not significantly contribute to improved productivity, as opposed to the monotonic model. In other words, when employees feel that their values are met by a certain amount of environmental supplies, their job performance reaches the point close to the optimal level and remains relatively constant irrespective of how much more environmental supplies they receive.

The optimal model also shows a curvilinear relationship and describes the relationship advocated by person-environment fit theories (Dawis & Lofquist, 1984; Law et al. 1996; Walsh & Holland, 1992). That is, employees’ job performance
reaches the optimum level when there is a perfect fit between their values and environmental supplies. However, their performance decreases when there is a deviation from the fit (in the forms of both excess and insufficient environmental supplies).

Hypotheses 8 and 9 were accorded with the optimal model. However, the other two models were also tested as the alternative models. By testing each model and illustrating the shapes of the relationship in three-dimensional figure (where each axis represents environmental, personal and occupational performance scores), more comprehensive features of the relationship could be scrutinised. To test these models, specific guidelines offered by Edwards (1994, 1996, 2002; Edwards & Van Harrison, 1993; Edwards & Parry, 1993) were followed.

First, a regression equation for each model was identified. The following equations and specification of constraints were derived from the work of Edwards (Edwards, 1994, 1996, 2002; Edwards & Van Harrison, 1993; Edwards & Parry, 1993). For the monotonic model, the equation used algebraic differences between environmental factors (represented as E in the equations) and a personal factors (represented as P) to predict job performance (labelled JP). The equation is presented below.

<Equation 1>  

\[ JP = b_0 + b_1(E - P) + e \]

This equation indicates that the excess E against P increases JP, whereas the lack of E decreases it. Expanding this equation yields:

<Equation 2>  

\[ JP = b_0 + b_1E - b_1P + e \]  

(2)

Comparing this equation with a general linear (unconstrained) regression equation with an arbitrary variable labelled X, Y, and Z as shown below,

<Equation 3>  

\[ Z = b_0 + b_1X + b_2Y + e \]

---

1 E = Environmental factors (representing nurses’ perceptions of the public image of them, their actual nursing roles or the environmental supplies). P = Personal needs (representing nurses’ self-concept, role conception or work values). JP = Job performance.
it is apparent that equation 2 has one constraint. That is, the coefficient on E must be equal in magnitude of that on P with an opposite sign. In other words, when the unconstrained equation 3 is entered to regression analysis, the relationship between $b_1$ and $b_2$ in equation 3 must show $b_1 = -b_2$ in order to support the monotonic model.

The equation predicting turnover intention (labelled TI) is shown below. In this equation, the excess E against P decreases TI, while the lack of E increases it.

\[
\text{TI} = b_0 - b_1(E - P) + e \\
= b_0 - b_1E + b_1P + e
\]

Compared with equation 3, equation 4 has the same constraint as that of equation 3.

As to the optimal model, the algebraic difference in equation 1 was replaced with squared difference of $(E - P)^2$, indicating that the difference between E and P (both $E > P$ and $E < P$) contributes to low performance (see equation 5).

\[
\text{JP} = b_0 - b_1(E - P)^2 + e
\]

Expanding this equation gives,

\[
\text{JP} = b_0 - b_1E^2 + 2b_1EP - b_1P^2 + e
\]

This equation contains second-order terms of $E^2$ and $P^2$ and interaction term of EP, indicating the model is quadratic. Comparing this equation with a general (unconstrained) quadratic regression equation shown below,

\[
Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e
\]
equation 6 has four constraints: (1) the coefficients on E is zero, (2) the coefficient on P is zero, (3) the coefficients on $E^2$ and $P^2$ are equal and negative, and (4) the coefficients on $E^2$, EP and $P^2$ sum to zero. In other words, equation 7 must satisfy these constraints, if the model is identical as the optimal model.

---

For turnover intention, the equation is

\[
TI = b_0 + b_1 (E - P)^2 + e
\]  

\[
= b_0 + b_1E^2 - 2b_1EP + b_1P^2 + e
\]

This equation shows that the person-environment misfit (that is, both the excess and the lack of E against P) increase TI. The same constraints identified above apply to the turnover intention model except that the coefficients on \(E^2\) and \(P^2\) are positive, as opposed to the constraint (2) indicated above.

With reference to the asymptotic model, the model indicates that JP remains relatively constant when E exceeds P, but JP decreases significantly when P exceeds E. Therefore, the equation for the asymptotic model was expressed by replacing the quantity \((E - P)^2\) with \([((E - P) - m)^2\) in equation 5, where \(m\) represents the theoretical maximum of \((E - P)\). The theoretical maximum in this study is 5.

\[
JP = b_0 - b_1 [(E - P) - m]^2 + e
\]

This equation, \( [(E - P) - m]^2 \) gives increasingly larger positive values, when P exceeds E (i.e., when the score of \((E - P)\) becomes negative). Thus, \(-b_1 \([(E - P) - m]^2\) results in a significant decrease in JP, when \(P > E\). On the other hand, \([(E - P) - m]^2\) gives smaller and smaller values when E exceeds P, and eventually becomes 0 when \((E - P)\) is equivalent to \(m\). Consequently, \(-b_1 \([(E - P) - m]^2\) results in relatively small changes in JP, when \( E > P\). Expanding \([(E - P) - m]^2\) shows that this equation 9 includes second-order (quadratic) terms and interaction term as shown below.

\[
JP = b_0 - b_1m^2 + 2mb_1E - 2mb_1P - b_1E^2 + 2b_1EP - b_1P^2 + e
\]

Thus, this equation illustrates a curvilinear relationship and was identified to have the following constraints as compared to the unconstrained quadratic equation 7: (1) the coefficients on E and P are equal in magnitude but opposite in sign, (2) the coefficients on \(E^2\) and \(P^2\) are equal and negative, (3) the coefficients on \(E^2\), EP and \(P^2\)

---

3 E = Environmental factors. P = Personal needs. JP = Job performance. TI = Turnover intention. m = Theoretical maximum of \((E - P)\).
sum to zero, and (4) the coefficients on E is 2m times the coefficient on $E^2$, but opposite in sign.

The asymptotic equation for turnover intention is presented below.

<Equation 11>\(^4\)

$$TI = b_0 + b_1 [(E - P) - m]^2 + e$$

$$= b_0 + b_1 m^2 - 2mb_1E + 2mb_1P + b_1E^2 - 2b_1EP + b_1P^2 + e$$

Compared with equation 9, the coefficient on $[(E - P) - m]^2$ in equation 11 is positive. Hence, this equation produces increasingly high scores on TI, when P exceeds E, but it yields smaller changes on TI when E exceeds P. The constraints for this equation 11 are the same as those for the equation 10 except that the coefficients on $E^2$ and $P^2$ are positive in the constraint (2) and the coefficient on E is 2m times the coefficient on $E^2$, but opposite in sign in the constraint (4).

Before each model was tested to determine which model would provide the best prediction for occupational performance, linear transformation of all the predictor variables was conducted. This was to reduce the likelihood to encounter the presence of multicollinearity that violates the assumption of regression analysis. The presence of multicollinearity was highly suspected in this analysis, as some equations contained quadratic and interaction terms. For example, variable P was highly correlated to variables $P^2$ and EP in equation 5 to 11, as both $P^2$ and EP contained P component. Subtracting the scale mean from each of row scores to reduce multicollinearity has been recommended (Edwards, 1996; Edwards & Van Harrison, 1993). By centring scales, P can take both positive and negative signs, while $P^2$ can take only a positive sign, and the sign of EP depends on the sign of P and E. This gives variety of relationships between P, $P^2$ and EP, thus reducing the likelihood of multicollinearity (Cohen et al., 2003; Neter, Machtsheim & Wasserman, 1996; Tabachnick & Fidell, 2001). Subtracting the scale means, rather than subtracting the sample means to reduce multicollinearity, also provided easier interpretation of the three-dimensional response surface analysis (Edwards, 1996; Edwards & Van Harrison, 1993). This procedure was effective in reducing multicollinearity in the previous studies. However, it did not contribute to reducing multicollinearity in the present study. This

\(^4\) E = Environmental factors. P = Personal needs. TI = Turnover intention. $m =$ Theoretical maximum of ($E - P$).
is because the responses on many predictor variables were concentrated within the range of 4.00 and 6.00, thus subtracting 3.50 (the midpoint of the scales) resulted in turning only a small amount of responses into negative values. As the means of the predictor variables ranged from 3.88 to 5.20 in this study, subtracting 4.50, instead of 3.50, from all the predictors appeared to provide a more effective approach to reduce multicollinearity. Thus, linear transformation of all the predictor variables was conducted by subtracting 4.50 from each variable. This resulted in each predictor variable ranging from 1.50 to –3.50 with the midpoint of the scale as –1.00.

Having identified the regression equations and transformed the data, the hypothesis testing was conducted in the following manner (Edwards, 1994; Edwards, 1996; Edwards & Van Harrison, 1993) To begin with, the monotonic model was tested. The first step of this analysis began with entering the unconstrained monotonic equation to the regression analysis and examining the change in $R^2$. If the increase in $R^2$ was significant, observation of individual coefficients was carried out in order to examine whether they were significant and showed expected direction as indicated in the constrained equation as the second step. For instance, the coefficient on E needed to be positive and that on P negative in order to fit the monotonic model for job performance (see equation 2). Third, the effect of the constraints was tested by imposing them as a set on the unconstrained equation (model), and by examining the change in $R^2$. The significant reduction in $R^2$ suggests that the model does not conform to the monotonic model, as the constraints (i.e., the conditions for the monotonic model) reduced explained variance shared with the dependent variable predicted by the unconstrained equation. To test if imposing the constraints significantly reduces the $R^2$ in the unconstrained model, this study utilised an F-test to compare $R^2$ of the unconstrained model with that of the constrained model (Dwyer, 1983). The equation is presented below.

$$<\text{Equation 12}>$$

$$F = \frac{(R(t) - R(r))/k}{[1 - R(t)]/(N - j)}\quad df = k, N - j$$

where
\[ R(t) = R\text{-square for the unconstrained regression on } Y \text{ on } j \text{ dummy variables defining } j \text{ groups (in this study, } j \text{ refers to the number of predictors plus 1 for constant) } \]

\[ R(r) = R\text{-square for least square solution with } k \text{ constraints (or contrasts) } \]

\[ N = \text{total sample size} \]

(Dwyer, 1983, p. 138-139)

Fourth, terms one order higher than those in the equation (in this case, second-order terms of \(E^2, EP\) and \(P^2\)) were entered to unconstrained models to examine the change in the \(R^2\). If there is a significant increase in the \(R^2\), this suggests that the model is not monotonic/linear, but is curvilinear. For the each step of this analysis, variables were entered as a set to regression analysis in order to reduce type I error. This four-step procedure was repeated to test both the asymptotic and optimal models except that cubic terms (i.e., \(E^3, E^2P, EP^2, P^3\)) were entered to the models as the fourth step. Both the asymptotic and optimal models were tested only when the monotonic model was rejected and a curvilinear relationship was suggested.

For each model to be supported, the following criteria must be fulfilled (Edwards, 1994).

1. \(R^2\) for the unconstrained model should be significant.
2. The appropriate individual coefficients in the unconstrained models must be significant and in expected direction as specified by the constrained models.
3. The set of the constraints must not be rejected (i.e., reduction in \(R^2\) should not be significant), when the constraints are imposed on the unconstrained model.
4. The increase in \(R^2\) should not be significant, when the set of terms one order higher than those indicated by the equation was entered to the unconstrained model.

Demographic variables were not controlled in this analysis. This was because controlling for the effects of the demographic variables required additional step in hierarchical regression analysis, which would increase type I error. It was also that the aim of this analysis was to preliminary test the effect of the person-environment fit on
nurses’ occupational performance rather than establishing the generalisability of the findings, as this type of the analysis was uncommon in nursing. Therefore, the results of the analysis should be viewed as how nurses in this particular group responded to the person-environment fit. Although the demographics were not controlled for, their effects on the dependent variables were tested and reported in the result chapter for references.

In the final step for of model testing, response surface analysis, which examined the three-dimensional relationships between personal, environmental and occupational performance factors, was conducted as recommended by Edwards (Edwards, 1994, 1996, 2002; Edwards & Van Harrison, 1993; Edwards & Parry, 1993). Before proceeding response surface analysis, unconstrained regression equations obtained from the previous analysis were retransformed in such a way that the scale ranges from –2.50 to +2.50 with the midpoint of the scale 0. This re-scaling made the interpretations of the results of response surface analysis easier. It also allowed the direct applications of the equations for response surface analysis specified by Edwards and Parry (1993) and Edwards (2002). Transformation of the equations was done by replacing E with E – 1 and P with P – 1 in the unconstrained regression equation 7. This gave the following equation.

\[ Z = b_0 + b_1(E - 1) + b_2(P - 1) + b_3(E - 1)^2 + b_4(E - 1)(P - 1) + b_5(P - 1)^2 + e \]

As shown in equation 13, only the constant and the coefficients on E and P have changed. These coefficients were termed \( b_0^* \), \( b_1^* \) and \( b_2^* \) hereafter.

The following describes the procedures and interpretations specified by Edwards and Parry (1993) and Edwards (2002).

First, the stationary point and two principal axes (the first and second principal axes), which are three key features for the three-dimensional response surface, were identified. The stationary point is referred to as "the point at which the slope of the

\[ Z = b_0^* + b_1^*(E - 1) + b_2^*(P - 1) + b_3^*(E - 1)^2 + b_4^*(E - 1)(P - 1) + b_5^*(P - 1)^2 + e \]

\[ = (b_0 - b_1 - b_2 + b_3 + b_4 + b_5) + (b_1 - 2b_3 - b_4)E + (b_2 - b_4 - 2b_5)P + b_3E^2 + b_4EP + b_5P^2 \]  

\[ (13) \]

5 \( E = \) Environmental factors. \( P = \) Personal needs.
The stationary point in the optimal model is projected at the centre of the xy plane, which corresponds to the maximum point of the concave surface (i.e., the surface is dome shaped) in the job performance model (see Figure 5.2). This point also corresponds to the minimum point of the convex surface (i.e., the surface is bowl shaped) in the turnover intention model (see Figure 5.3) (Myers & Montgomery, 1995). In this study, the stationary point should be pinpointed at \( x = 0, y = 0 \) (the midpoints of transformed data), if the optimal model is supported.

The principal axes are those lines running diagonally to each other and intersecting at the stationary point. For the dome-shaped surface, the downward curvature is least along the first principal axis and greatest along the second principal axis. If a surface fits the dome-shaped optimal model (i.e., the hypothesised model for job performance, see Figure 5.2 (B)), the first principal axis runs along the \( Y = X \) line, while the second principal axis runs along the \( Y = –X \) line. In contrast to the dome-shaped model, the upward curvature is greatest along the first principal axis and least along the second principal axis in the bowl-shaped surface. If the surface shows a bowl-shaped optimal model (i.e., the hypothesised model for turnover intention, see Figure 5.3 (B)), the first principal axis runs along the \( Y = –X \) line, while the second principal axis runs along the \( Y = X \) line (Edwards & Parry, 1993; Edwards, 2002).
Figure 5.2. An example of a dome-shaped optimal model with illustration of the stationary point and principal axes.

Note: Scores on environmental factors are projected on the x-axis (represented as E in Figure (B)), while scores on personal needs are projected on the y-axis (P in Figure (B)). These figures were created based on the work of Edwards and Parry (1993).
Figure 5.3. An example of a bowl-shaped optimal model with illustration of stationary point and the principal axes

*Note.* Scores on environmental factors are projected on the x-axis (represented as E in Figure (B)), while scores on personal needs are projected on the y-axis (P in Figure (B)). These figures were created based on the work of Edwards and Parry (1993).
The stationary point \((X_0, Y_0)\) on the xy plane was located by using the following equations.

\(<\text{Equation 14}>^6\)

\[ X_0 = \frac{b_4^* b_4 - 2b_1^* b_5}{4b_3 b_5 - b_4^*} \]

\(<\text{Equation 15}>^6\)

\[ Y_0 = \frac{b_1^* b_4 - 2b_1^* b_5}{4b_3 b_5 - b_4^*} \]

Values for \(X_0\) and \(Y_0\) provide some interpretations about the shape of the surface. For instance, if the denominators, \(4b_3 b_5 = b_4^2\), is zero, the stationary point is undefined. If the denominators are not zero, the stationary point is located on a sloped surface. If \(b_3, b_4\) and \(b_5\) equal zero simultaneously, the surface is plane which supports the monotonic model.

The first and second principal axes can be described on the xy plane. The equation for the first principal axis is

\(<\text{Equation 16}>\)

\[ Y = P_{10} + P_{11} X \]

where \(P_{11}\) is expressed as

\(<\text{Equation 17}>\)

\[ P_{11} = \frac{b_5 - b_3 + \sqrt{(b_3 - b_5)^2 + b_4^2}}{b_4} \]

Once \(X_0, Y_0,\) and \(P_{11}\) are determined, \(P_{10}\) was identified by using the following equation.

\(<\text{Equation 18}>\)

\[ P_{10} = Y_0 - P_{11} X_0 \]

If \(b_4 = 0\), both the numerator and denominator of \(P_{11}\) becomes 0, rendering the principal axis undefined. If \(b_5 = b_3\), \(P_{11}\) equals either +1 or –1 depending on the sign of \(b_4\). If \(b_5 = b_3\) and \(b_4\) is positive, \(P_{11}\) becomes 1 and equation 16 becomes \(Y = P_{10} + X\),

\(^6\) \(b_0^*\) = constant, \(b_1^*\) = coefficient on \(E\) and \(b_2^*\) = coefficient on \(P\) after data transformation.
suggesting that the first principal axis runs parallel to the \( Y = X \) line with the axis intersecting at \( P_{10} \) on \( y \)-axis. If \( P_{10} = 0 \) and \( P_{11} = 1 \), the first principal axis runs on the \( Y = X \) line, which satisfies the criterion of the dome-shaped optimal model (see Figure 5.2 (B)). Similarly, when \( b_5 = b_3 \) and \( b_4 \) is negative, \( P_{11} \) becomes \(-1\). Moreover, when \( P_{10} = 0 \) and \( P_{11} = -1 \), the first principal axis runs along the \( Y = -X \) line, satisfying the criterion of the bowl-shaped optimal model (see Figure 5.3 (B)).

On the other hand, if \( P_{11} \) is not 1, the equation 16 becomes \( Y = P_{10} + P_{11}X \), meaning that the principal axis is rotated off the \( Y = X \) line. When the point, at which the first principal axis in the optimal dome-shaped model crosses the \( Y = -X \) line, differs from 0 (this point can be estimated by substituting \(-X\) for \( Y \) in the equation 16, which yields \(-P_{10}/ (1 + P_{11})\)), it suggests that the first principal axis is laterally shifted from the \( Y = X \) line. In either case, the first principal axis does not run along the \( Y = X \) line, violating the assumption of the optimal dome-shaped model.

The equation for the second principal axis is expressed below.

\[ \text{Equation 19} \]

\[ Y = P_{20} + P_{21}X \]

The equation for \( P_{21} \) is

\[ \text{Equation 20} \]

\[ P_{21} = \frac{b_5 - b_3 - \sqrt{(b_3 - b_5)^2 + b_4^2}}{b_4} \]

Once \( X_0, Y_0 \), and \( P_{21} \) are determined, \( P_{20} \) is identified by the following equation.

\[ \text{Equation 21} \]

\[ P_{20} = Y_0 - P_{21}X_0 \]

Equation 20 is similar to equation 17. Hence, if \( b_5 = b_3 \) and \( b_4 \) is positive, \( P_{21} \) becomes \(-1\) and the equation 19 becomes \( Y = P_{20} - X \), suggesting that the second principal axis running parallel to the \( Y = -X \) line. If \( P_{20} = 0 \) and \( P_{21} = -1 \), the second principal axis fits the \( Y = -X \) line. This supports the assumption of the person-environment theories, when job performance is a dependent variable (i.e., the optimal
model is dome-shaped). Similarly, if $P_{20} = 0$ and $P_{21} = 1$, the second principal axis runs on the $Y = X$ line, supporting the bowl-shaped optimal model.

On the other hand, if $P_{21}$ differs from 1, it suggests that the second principal axis in the optimal bowl-shaped model is rotated off the $Y = X$ line. When the point, at which the second principal axis in the optimal bowl-shaped model crosses the $Y = –X$ line, differs from 0 (this point can be estimated by substituting $–X$ for $Y$ in the equation 19, which yields $–P_{20}/ (1 + P_{21})$), it suggests that the second principal axis is laterally shifted from the $Y = X$ line. In either case, the second principal axis does not run along the $Y = X$ line, indicating violation of the assumption for the optimal bowl-shaped model.

Second, the slopes of surfaces along $Y = X$, $Y = –X$ and both principal axes were computed. The equation used for determining the slope of the surface along the $Y = X$ line was expressed by substituting $X$ for $Y$ in equation 7.

<Equation 22>\(^7\)

$$Z = b_0^* + b_1^*X + b_2^*X + b_3X^2 + b_4X^2 + b_5 X^2 + e$$

$$= b_0^* + (b_1^* + b_2^*)X + (b_3 + b_4 + b_5) X^2 + e$$

The coefficient on $X$ (i.e., $(b_1^* + b_2^*)$) indicates the slope of the surface at $X = 0$. If the coefficient on $X$ is significantly different from 0, it suggests that the slope of a surface along the $Y = X$ line is not flat. The coefficient on $X^2$ (i.e., $(b_3 + b_4 + b_5)$) indicates the curvature of the surface. If the coefficient on $X^2$ is significantly different from 0, it indicates that the surface is curvilinear. If a model fits the optimal model, the first principal axis in the dome-shaped model and the second principal axis in the bowl-shaped model run along the $Y = X$ line, and the slopes of the surfaces along the $Y = X$ line in both the models are flat and their surfaces are linear (see Figure 5.4).

The slope of the surface along the $Y = –X$ line was calculated by substituting $–X$ for $Y$ in the equation 7. Thus, the equation is as follow.

<Equation 23>\(^7\)

$$Z = b_0^* + b_1^*X + b_2^*(-X) + b_3X^2 + b_4X(-X) + b_5 (-X)^2 + e$$

$$= b_0^* + (b_1^* – b_2^*)X + (b_3  – b_4 + b_5) X^2 + e$$

\(^7\) $b_0^*$ = constant, $b_1^*$ = coefficient on $E$ and $b_2^*$ = coefficient on $P$ after data transformation.
Slope along the 1st principal axis (the Y = X line)   Slope along the 2nd principal axis (the Y = -X line)

(A) Dome-shaped optimal model

(B) Bowl-shaped optimal model

Figure 5.4. The optimal models with slopes along the principal axes

Note. These figures were created based on the work of Edwards and Parry (1993).
The same interpretations for equation 22 apply to equation 23. If the coefficient on \(X\) (i.e., \((b_1^* - b_2^*)\)) is significantly different from 0, it suggests that the slope of a surface along the \(Y = -X\) line is not flat. If the coefficient on \(X^2\) (i.e., \((b_3 - b_4 + b_5)\)) is significant, the slope is curvilinear. If a model fits the optimal model, the second principal axis in the dome-shaped model and the first principal axis in the bowl-shaped model run along the \(Y = -X\) line, and the slopes of the surfaces along the \(Y = -X\) line in both the models are flat and their surfaces are curvilinear as shown in Figure 5.4.

The slopes of the surfaces along both principal axes were calculated in a similar fashion and the same interpretations apply. As to the equation for the first principal axis, \(Y\) in equation 7 was substituted by \(P_{10} + P_{11}X\) as shown in equation 16.

\[
Z = b_0^* + b_1^*X + b_2^*(P_{10} + P_{11}X) + b_3X^2 + b_4X(P_{10} + P_{11}X) + b_5(P_{10} + P_{11}X)^2 + e
\]

\[
= b_0^* + b_2^*P_{10} + b_5P_{10}^2 + (b_1^* + b_2^*P_{11} + b_4P_{10} + 2b_5P_{10}P_{11})X + (b_3 + b_4P_{11} + b_5P_{11}^2)X^2 + e
\]

The coefficient on \(X\) indicates the slope of the surface at \(X = 0\) (that is, where the first principal axis crosses the \(y\)-axis). The coefficient on \(X^2\) indicates the curvature of the surface. If the coefficient on \(X^2\) is significantly different from 0, the surface along the first principal axis is curvilinear. For the optimal model, the surface along the first principal axis in the dome-shaped model needs to be linear, and that of the bowl-shaped model needs to be curvilinear (see Figure 5.4). On the other hand, the slopes of the surfaces along the first principal axis in both models need to be flat.

For the equation for the second principal axis, \(Y\) in equation 7 was replaced with \(P_{20} + P_{21}X\) as in equation 19.

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\(^8\) \(b_0^* = \) constant, \(b_1^* = \) coefficient on \(E\) and \(b_2^* = \) coefficient on \(P\) after data transformation.
For the optimal model, the slope of the surface along the second principal axis in the dome-shaped model needs to be curvilinear, and that of the bowl-shaped model needs to be linear (see Figure 5.4). But, the slopes of the surfaces in both models need to be flat.

After the locations and the slopes along the point and lines of interest were identified, a significance test was conducted to determine whether the locations of a stationary point, both principal axes, and slopes of surfaces along the lines of interest fit the assumptions of the optimal model. To conduct a significance test, this thesis utilised a Bootstrap procedure to estimate the standard errors of the coefficients from an obtained data set (Edwards, 2002; Edwards & Parry, 1993; Shao & Tu, 1995).

Bootstrap is “a data-based re-sampling method used for making statistical inferences about population estimates” (Smith, 2000, p. 2). Obtaining a population parameter (e.g., 95% confidence interval) is essential in determining whether or not data obtained from the sample drawn from the particular population (for example, a stationary point obtained from the sample data using the above equation) differs from null-hypothesised values at 5% of the chance. Bootstrap allows estimating a population parameter by randomly re-sampling data from an obtained data set and producing the sample mean for each re-sampling. These mean scores are used to estimate a population distribution and to calculate the 95% confidence interval (Efron, 1982; Smith, 2000; Shao & Tu, 1995). In other words, by continuously re-sampling from an obtained data set, Bootstrap can produce as many pseud-sample means as desired, which are used to produce a 95% confidence interval for pseud-population. Thus, if one conducts 1000 times re-sampling to estimate the population parameter for a stationary point, he/she can obtain 1000 pseud-stationary points based on bootstrap re-sampling. This helps to produce a 95% confident interval of pseud-population by

\[ Z = b_0^* + b_1^*X + b_2^*(P_{20} + P_{21}X) + b_3X(P_{20} + P_{21}X) \]
\[ + b_5(P_{20} + P_{21}X)^2 + e \]
\[ = b_0^* + b_2^*P_{20} + b_5 P_{20}^2 + (b_1^* + b_2^*P_{21} + b_4P_{20} + 2b_5P_{20}P_{21})X \]
\[ + (b_3 + b_4P_{21} + b_5P_{21}^2)X^2 + e \]

\[ b_0^* = \text{constant}, \quad b_1^* = \text{coefficient on E and} \quad b_2^* = \text{coefficient on P after data transformation.} \]
rank-ordering the pseud-stationary points and identifying the critical values that represent 2.5% and 97.5% of the distribution. This confidence interval is used to determine, for example, if the stationary point obtained by equation 14 and 15 is significantly different from 0. In this study, 10,000 time re-sampling was conducted to estimate the population parameters as recommended by Edwards (2002).

Utilising the method developed by Edwards (1996) offered the thesis with two benefits. First, it allowed the researcher to test hypothesised relationships between the PEO fit and occupational performance (i.e., the optimal model) against the other two alternative models (i.e., monotonic and asymptotic models). Having the alternative models could provide opportunities to explore phenomena under investigation from diverse viewpoints, which might be helpful especially when the hypothesised model was rejected. Second, it allowed the researcher to avoid methodological problems often identified in the person-environment fit study. The conventional method involved a single index of the person-environment fit that was produced by subtracting environmental scores from the corresponding personal scores. However, this method obscures unique individual effects of person and environment, and interaction effect between them on respective dependent variables (Edwards, 1996; Tinsley, 2001). In contrast, the methods specified by Edwards allowed the researcher to examine the effect of each variable along with whether the predicted variables provided support for the hypothesised relationships. For these reasons, adopting Edwards’ method was believed to offer more accurate examination of the findings.

Hypotheses 8 and 9 were tested based on the entire sample with outliers removed. These hypotheses were not tested by the groups of participants for different levels of collective self-esteem, the length of clinical experience or clinical areas. This was because creating the groups would result in a decrease in the sample size, which leads to insufficient statistical power to detect a potential effect of the quadratic terms.

Controlling for Type I Error

Hypothesis testing involved hierarchical regression analysis, in which multiple steps were taken to enter variables to regression analysis. This type of analysis increases the likelihood of making a type I error. This is because significance alpha is assigned for a set of tests. Hence, using alpha level to examine incremental $R^2$ of each step within a test inflates the $\alpha$ level and leads to chance of falsely rejecting null-
hypotheses. To avoid inflating $\alpha$ level, this thesis endeavoured to reduce the number of analytical steps to be taken in the hierarchical regression analysis by entering a group of variables as a set in each step rather than entering each variable one at a time.

When a given relationship between variables was tested at a factor level, however, controlling type I error by minimising the analytical steps was considered insufficient. This was because investigating any relationships at the factor level required multiple tests, since many variables consisted of several factors. These multiple tests would further increase the chance of inducing a type I error. A risk of making a type I error would also be present when a t-test was conducted at a factor level. Reducing alpha level to strictly control a type I error is one option to counteract this problem. However, this measure also increases a chance of making type II error (Harris, 1995; Polit, 1996; Stevens, 1986). Therefore, this thesis adopted the sequential Bonferroni procedure to control both types of errors (Holland & Copenhaver, 1998; Seaman et al., 1991), where the hypotheses were tested at a factor level in any analysis/tests.

The sequential Bonferroni procedure reintroduced by Holland and Copenhaver (1998) was followed in this thesis. First, a family of tests, for which a type I error was sought to be controlled, was determined. A family should consist of a set of relationships between variables that are hypothetically related. In this study, $k$ sets of relationships, derived from $m$ factors of variable A multiplied by $n$ factors of variable B, comprised a family, when the relationship between variable A and B was examined at the factor level. In addition, the family should have the same analytic purpose. In the regression analysis in this thesis, each step served a different analytic purpose. For example, the first step to control the effects of demographic or other influential variables had a different purpose from the next step to actually test the hypothesised relationship between variables of the interest. Therefore, each step was also treated as a family. This denotes that a number of families in a given hypothesis testing equals to a number of analytical steps taken in the hierarchical regression analysis, and each family consists of $k$ sets of relationships. After families have been defined, probabilities of relationships within a family were organised in an ascending order, so that the smallest probability came at the top of the order. Then, each probability was compared with $P(i) = \alpha / (k - i + 1)$, where $\alpha$ was significance level (i.e., .05 in this study), $k$ was the number of the relationships within a family, and $i$ was the ascending
ranked order of the each probability. This was done sequentially from the smallest probability to the larger ones. When actual probability of \( i \)th rank exceeded \( P(i) \), the procedure was ceased, and only the probabilities smaller than \( P(i) \) were retained as significant at alpha level of .05. In testing hypothesis 1, for example, a significant increase in \( R^2 \) after entering the score on the perceived public image gave an indication that the public image was significantly related to nurses’ perception of their actual nursing role at alpha level of .05. This variable-level relationship was considered as a family, and this family consisted of four factor-level relationships (two-factor solutions were obtained for the measures on both the perceived public image of nurses and the actual nursing role. This led to four relationships (i.e., two factors from the public image and two factors from the actual role) to be tested at the factor level). Thus, the significance of these four relationships was determined by arranging their probabilities in an ascending order and by comparing them with \( P(i) \), and retaining only the probabilities which were smaller than \( P(i) \) as significant. For example, if the 3rd ranked probability were .03, which exceeded .025 produced by \( P(i) = .05/ (4 – 3 + 1) \), the probabilities after the 3rd rank (including the 3rd ranked probability) would be determined as non-significant.

Methods of Qualitative Inquiry

**Purpose**

A focus group discussion was conducted to elicit nurses’ interpretations of the results of the quantitative study. Furthermore, the focus group discussion was used to discuss possible remedial solutions to enhance the public image of nurses. This discussion, thus, helped to explore why certain relationships were supported by the quantitative data, but others did not. It also helped to construct the counteractive measures against the impact of the nursing stereotyping on nursing practice.

**Focus Group Method**

A focus group refers to a group discussion organised to explore and understand a specific set of issues by promoting self-disclosure among participants and by eliciting their real thoughts and feelings (Kitzinger, 1999; Krueger & Casey, 2000). A focus group has been used in many disciplines such as nursing and marketing with different purposes. These purposes include eliciting group norms and group process, identifying differences between individuals within a group, generating
new ideas, theories and methods, making decisions, sharing life experience, and exploring and complementing survey results (Bloor, Frankland, Thomas & Robson, 2001; Fern, 2001; Kitzinger, 1999; Krueger & Casey, 2000). In this study, a focus group was used to serve two purposes. First, it was to explore participants’ interpretations of the previous survey findings. In particular, a focus group was used to elicit: 1. nurses’ perception of the public image of nurses, 2. their interpretation or experience of how the public image could influence their nursing practice, and 3. to explore unexpected survey findings on the relationship between the PEO fit and their occupational performance. The information collected was used to interpret as well as to support the discussion on the quantitative study findings at the later stage of the PhD project. Second purpose of the focus group was to discuss countermeasures to improve the image of nursing. The second purpose may sound like generating new ideas for the policy concerning the promotion of the public image of nurses. However, its genuine purpose was not to apply the results of the focus group to policy-making, as the focus group in this thesis consisted of a small number of nurses and the measures proposed by the participants may be contingent (Bloor et al., 2001). Rather, its purpose was to complement strategies currently proposed in numerous studies to improve nursing image.

A focus group offered various benefits to this thesis, which could not be achieved by individual interviews. To begin with, discussion in a group provided a more natural environment to collect data, wherein one’s opinion could influence as well as be challenged by others’ (Bloor et al., 2001). So too, interaction with others led to stimulation of discussion, which resulted in a deeper level of information elicitation. In a focus group, participants had opportunities to validate or refute others’ opinions or seek clarification. They also had opportunities to reflect their own opinions, consolidate or change their ideas, and provide reasoning behind them based on challenges cast by others. (Kitzinger, 1999; Lane, McKenna, Ryan & Fleming, 2001; Reed & Roskell, 1997; Stevens, 1996; Webb & Kevern, 2001). This type of interaction would result in eliciting group norms that were or were not articulated in reality. The focus group also provided participants with freedom to speak. Stevens (1996, p, 171) maintains, “And because no individual is required to answer a particular question, each person can speak when she or he has definite feelings or opinions about the topic at hand, enhancing both comfort and spontaneity”.

Furthermore, the focus group provided opportunities to feedback the survey findings as well as the results of the current focus group post the session. The latter helped to obtain validation of the findings in the focus group from the participants or to make modifications of the researcher’s understandings of the discussion. Thus, it enhanced the validity of the study findings. Finally, a focus group offered an efficient procedure to collect in-depth information in terms of time and research expenses.

In summary, a focus group helped to enrich the survey findings. At the same time, it provided an effective method to explore the findings with elicitation of group process and consensus.

The Participants and Recruitment

Focus group participants were recruited from participants who had participated in the quantitative study and volunteered to participate. Recruitment was also aimed at involving currently practising nurses in the metropolitan area. This meets the requirement of a focus group, which is to have a reasonably homogeneous group to explore shared experience or group norm (Fern, 2001; Greenbaum, 1998).

The participant recruitment procedures were as follows. As for the hospital sample, a flier containing the purpose and procedures of the focus group (see the example in Appendix J) and the summary report on the findings of the quantitative study were delivered to each ward in the metropolitan public hospital by the student researcher. As recommended by MacDougall and Fudge (2001), the NUM in each ward was contacted first as a key contact person, and they were asked for cooperation to recruit focus group participants. With the permission from the NUMs, the student researcher also talked to nurses on the shift to explain the nature of the research and to ask for voluntary participation. This procedure was repeated several times in order to increase access to contact each nurse. Nurses, who were not on the shift at the time of the recruitment and were interested in participating in the focus group, were asked to contact the researcher by either phone or e-mail. The contact detail of the researcher was indicated in the flier. An attempt to recruit nurses from different wards was made in order to enhance the transferability of the findings as well as to include nurses, who do not know each other, into the group. The latter was to minimise the possibility that social interaction would inhibit the disclosure of information on certain topics (Krueger & Casey, 2000). Regarding the university sample, the lecturers holding the
sessions were contacted first as key persons. Then, the fliers were distributed to the students by the lecturers in the classrooms. A follow-up e-mail was also sent by the lecturer to the students using a group email list, but not for all students enrolled in the subjects they were recruited from. If the students were interested in participating in the focus group, they were asked to contact the researcher by phone or e-mail. The volunteer students were given a summary report on the previous survey study. All the volunteers were given a reminder letter or email one week prior to the focus group. The letter and e-mail included the schedule of the focus group as well as the questions to be explored during the focus group. The latter information was provided to help participants prepare for the focus group discussion.

Krueger and Casey (2000) recommended having three to four focus groups with six to eight participants in each group. However, there were some difficulties in recruiting the focus group participants. As for the hospital sample, many nurses had left their jobs since the survey. Moreover, a low response rate and anonymity of the participants in the survey study made recruitment from the previous survey participants even more difficult. With reference to the University sample, assignments and/or the final examination at the end of the semester placed the students under an enormous pressure, and this led to few students volunteering to participate in the focus group. Consequently, despite the effort to recruit enough participants to conduct at least two focus groups, there were initially only 10 volunteers from the hospital sample and 1 from the university sample, who would like to be involved in a focus group. Therefore, a decision to gather all the volunteers and to have one focus group, instead of having two small focus groups, was made. This decision became more pertinent later, as, of 11 volunteers, 3 became unable to attend the focus group for a variety of reasons and a further 2 did not turn up. As a result, 6 participants attended the focus group. This sample size appeared to work well, as it provided each participant with more speaking time and prevented some participants from depending on others’ contribution to the discussion. Moreover, a relatively small group seems to have led to a more productive discussion, as it prevented a production block that resulted from listening to many comments from other participants and not being able to concentrate on what they wanted to say in the focus group (Fern, 2001).
Data Collection and Procedure

The focus group was held in a meeting room in the metropolitan public hospital. Data was collected using a semi-structured interview with open-ended questions. A semi-structured interview was chosen for the means of data collection because it facilitated the focus group in a way that maintained flexibility to pursue information while all the necessary questions were asked (Marshall & Rossman, 1999; May, 1991; Patton, 1990; Polit & Hungler, 1991). Moreover, the procedure encouraged participants to speak and interact with others, while minimising interference from the researcher (Kitzinger, 1999).

The focus group was conducted in a relaxed fashion. The number of the questions to be asked was kept at a minimum to provide participants with more thinking time. The focus group guide was made based on the recommendations from Greenbaum (1998). But, the suggestions made by other focus group researchers were also utilised (Bloor et al., 2001; Fern, 2001; Greenbaum, 1998; Kitzinger, 1999; Krueger & Casey, 2000; Lane et al., 2001; MacDougall & Fudge, 2001; Reed & Roskell, 1997). Overheads were prepared to present the results of the survey findings as well as to guide the focus group. The student researcher ran the focus group with the support of the research supervisor as a co-facilitator.

Introduction

1. The researchers introduced themselves and expressed gratitude for participation to the participants.

2. The student researcher explained the purpose of the thesis as well as the purpose of the focus group.

3. The participants were asked to choose a pseudonym that was used throughout the focus group, data analysis and report of the findings. Then, they were asked to write down their chosen pseudonym on a sticky paper and attach it on their chest. They were also asked to state their pseudonym during the focus group before they made any responses or comments. This would help to identify which comments belonged to which participants in the analysis stage of the transcript.

4. The participants were asked to read a Participant Information and Consent Form (see the example in Appendix K). Any questions from
the participants were clarified. They were asked to sign the consent form if they agreed to participate. They were also asked to complete a brief demographic questionnaire (see Appendix L), which would help to analyse each participant’s responses.

5. The participants were asked to introduce themselves to each other using their pseudonyms, and to describe their areas of practice and the length of clinical experience. This introduction was audio-recorded to test the quality of the recording, so that when the participants’ voices were too soft for recording, the student researcher could ask them to speak up. If the participants forgot to mention their pseudonym during the focus group, this introductory recording was also used to identify their voices.

Focus group: Data collection

1. The focus group began. The student researcher announced the commencement of the focus group. The researcher guided the participants through the results of the survey study and asked clarifying open-ended questions. To open the discussion with a general and easy-to-answer question as a warm-up, the researcher introduced the survey results of the comparison between nurses’ self-concept and their perception of the public image of them. Then, the researcher asked the following questions: What do you think of these results? How do you see the public image of nurses compared with your self-image?

2. Followed by the warm-up question, the focus group proceeded with questions, with greater complexity. The following questions were asked sequentially.

1) The participants were presented with the survey results, which showed positive relationships between nurses’ perception of the public image of nurses and their perceptions of their actual roles and environmental supplies. Then, the following question was asked: In what way do you think the public image of nurses influence the nursing practice? --- This was the core research question of this study.
2) The participants were presented with the survey results, which showed that nurses in different specialties perceived the different degree of the PEO fit. Then the following question was asked: In what areas do you think your professional needs are most and least satisfied with your actual nursing practice? -- - This was used to identify the areas of the PEO fit and misfit.

3) The participants were presented with the survey results, which showed that there was no difference in the perception of fit between nurses with less experience and those with more experience. Then, the following question was asked: How have your professional needs changed, as you have more clinical experience? And how has your perception of the fit between your professional needs and the actual practice changed? --- These questions helped to identify how the PEO relationship has transformed through lifespan of each nurse, which is difficult to capture by the questionnaire. They also helped to identify why the length of clinical experience did not moderate the perception of the PEO fit.

4) The participants were presented with the survey survey results, illustrating that their perceptions of their public image, the actual roles and the environmental supplies were in upward curvilinear relationships with their evaluation of job performance (e.g., when nurses perceived either negative or positive public image of nurses, their evaluation of job performance tended to be high). Then the following question was posed: Can you give me an example of how the relationship between your professional needs and the actual nursing practice impacted upon your overall job performance? (In particular, if your hospital were providing you with low autonomy, poor pay and career opportunities and low professional challenges, how would this affect your job performance?) --- This last question was used to clarify the impact of the PEO fit on their job performance, as the
quantitative results did not support the hypothesised relationship.

5) The participants were presented with the survey results, which indicated that the relationship between nurses’ need for task delegation, the actual task delegation practice and their turnover intention supported the hypothesised curvilinear model. Then, they were asked the following question: Why does this particular relationship (which is the relationship between nurses’ needs for the task delegation, the actual task delegation practice and turnover intention) supports the hypothesis, but the others do not? --- This was to clarify why different areas of the PEO relationship affect nurses’ turnover intention differently.

6) Having been presented with the overall results of the quantitative study, the participants were asked the following question: How do you think we can improve our public image? --- This was used to discuss remedial solutions to enhance the public image of nurses as well as to improve the nursing environment wherein nurses could exhibit a better performance and show a greater intention to remain in their jobs.

3. During the focus group, the participants were encouraged to elaborate on their interpretations of survey results, reflect on their experience, and share or debate their opinions by interacting with others. The researcher carefully attended to the participants, showed respect for their responses, sought clarification or confirmation of the responses using plain language. The student researcher also tried to minimise her interference in the group discussion. The co-facilitator took notes to record the participants’ behaviour during the focus group and the overall response of the participants. The co-facilitator assisted the student researcher during the focus group and ensured that participants had had the opportunity to voice their opinions.
4. At the end of each question, the student researcher summarised the overall discussion and sought the participants’ confirmation of its accuracy. This step enhanced accuracy of the interpretation of responses by the student researcher.

End of the focus group
1. The researcher informed the participants of the end of focus group.
2. The participants were told about a transcription check and how they would be contacted for that. The participants were also provided with the researcher’s contact details and asked to contact the researcher if they had any questions.
3. The participants were debriefed and thanked for their co-operation.

With the participants’ permission, the focus group was audio-recorded for data analysis. The entire focus group lasted approximately one and half hours. The focus group tape was transcribed by a professional typist, and the copies of the transcription were kept in locked storage.

Analysis
Data were analysed using thematic analysis. Framework method analysis proposed by Ritchie and Spencer (1994) was adopted in this thesis for this purpose. This method has also been used in a previous focus group research conducted by Lane et al. (2001). The framework analysis method enabled a researcher to pursue a range of research purposes such as defining and classifying concepts, exploring the nature and dynamics of phenomena and relationships between concepts, and finding explanations of phenomena arising from the qualitative data. It also provided a clear and systematic approach to the analysis of qualitative data. The framework method analysis consisted of five phases.

The first phase involved the researcher familiarising herself with the data through listening to the tape and reading the transcriptions and observation notes taken during the focus group. This phase of immersing oneself into data is commonly described in a variety of qualitative data analysis methods as the initial data analysis procedure (Ezzy, 2002; Miles & Huberman, 1994, Rice & Ezzy, 1999), as it led the researcher to grasping the overall patterns of the responses and emerging themes.
The second phase involved identifying a thematic framework. The identification of the framework was done by writing down a range of responses, the observed themes and patterns of the responses on a research note during the transcription review, and extracting the key issues, concepts and themes by reviewing the note. This framework (or index categories) guided systematic organisation of the data. The initial framework or categories identified in the early stage of this phase was open to reconsideration. This is because reviewing the transcription over time often led to revision and refining of categories, which involved distinguishing one aspect of the category from the other aspects, creating subcategories under a more abstract level of categories, and/or grouping and integrating several categories into more general categories (Ezzy, 2002; Mile & Huberman, 1994; Ritchie & Spencer, 1994). Identification of the thematic framework was pursued until sufficient categories to describe phenomena under investigation were created.

The third phase was indexing, which involved coding/referencing transcribed data. This was done in accordance with the categories and subcategories identified in the framework. The systematic application of the framework helped to organise the transcription in a way that each response received a clear definition of how it was interpreted (or clear definitions, where a particular response communicated multiple issues). It also helped to avoid the meaning of an index changing overtime (or becoming vague).

The fourth phase involved charting the responses in accordance with categories or subcategories. The responses were organised in a chart with the first column representing the participants, the first row representing a category and the second row representing the subcategories. This phase was considered to break down the responses from the context (Ritchie & Spencer, 1994), which allowed the researcher to compare and contrast the responses across the participants and (sub) categories and to identify the themes. Each response was also numbered according to the sequence of the conversation during the focus group. This identification number made it easy for the researcher to recognise how the interaction between the participants progressed, which is the crucial part of a focus group analysis (Kitzinger, 1999; Reed & Roskell, 1997).

The final phase involved mapping and interpreting the data in accordance with the purposes of the focus group. It was in this phase that disassembled data were
reassembled as a whole to make sense of the phenomena under investigation. Ritchie and Spencer (1994) articulate that this final phase helps to define concepts, map range and nature of phenomena, create typologies, find association, provide explanations, and develop strategies. This phase was used to: describe nature of nursing practice, find association between the public image of nurses, nurses’ professional needs and nursing practice, provide explanations of why certain hypotheses were or were not supported in the quantitative study, and to identify strategies to improve the image of nursing.

Rigor of Qualitative Data

According to Lincoln and Guba (1985), rigor of a study can be maintained through establishment of trustworthiness of the study. In other words, a study must reflect participants’ points of views and communicate audiences with the worthiness and usefulness of the study findings (Krueger & Casey, 2000; Lincoln & Guba, 1985). Establishing trustworthiness encompasses four dimensions that researchers need to pay attention to: credibility, transferability, dependability, and confirmability of study findings (Lincoln & Guba, 1985).

Credibility refers to truthfulness of study findings. This can be achieved by the use of triangulation, withholding a researcher’s preconception/bias (Lincoln & Guba, 1985), keeping a reflective journal and checking the interpretation with the student supervisor, who also attended the focus group. The present thesis utilised methodological triangulation to compliment strengths and compensate weaknesses of the quantitative study and to increase completeness of findings that explained phenomena under investigation (Begley, 1996; Brink, 1991; Cutcliffe & McKenna, 1999; Nolan & Behi, 1995; Polit & Hungler, 1991; Roberts & Taylor, 2002). In addition to the methodological triangulation, an attempt to withhold the researcher’s bias was made in order to reflect truth of phenomena. Moreover, for the findings to be as true as possible, the researcher’s understandings of participant’s responses was summarised at the end of each question in the focus group so as to check if there were no errors or distortion in the researcher’s understandings (Brink, 1991; Lincoln & Guba, 1985). At the end of the analysis, the researcher’s interpretations of the findings were reviewed by the student supervisor.
Transferability is defined as applicability of findings to other populations (Lincoln & Guba, 1985). Since a qualitative inquiry is directed toward uncovering multiple perceptions/interpretations of phenomena for each individual in a given context, it is difficult to establish transferability of the findings. However, the present thesis attempted to enhance the transferability of the findings by increasing a variety of respondents’ characteristics by the means of data triangulation (Begley, 1996; Brink, 1991; Cutchiffe & McKenna, 1999; Nolan & Behi, 1995; Polit & Hungler, 1991; Roberts & Taylor, 2002). Therefore, the participants were recruited from different clinical areas from one hospital and the university. In addition, the descriptions of participants were also presented in order for others to determine whether or not the findings of the thesis were applicable to their contexts.

Dependability characterises consistency of study findings (Lincoln & Guba, 1985). For data to be consistent, each participant was given an opportunity to check and modify their contribution to the focus group transcriptions, and then only consistent responses across time were taken into account for analysis (Brink, 1991; Lincoln & Guba, 1985). This is not to say that the participants’ viewpoints do not change. Lane et al. (2000) argue that because participants’ beliefs and behaviours change over time, data collected from survey research represents only a snapshot of reality, which the participants perceived at the particular time. Therefore, the participants’ disconfirming their comments during the transcription check does not mean that the data were not valid at the time of the collection. Rather, the transcription check was considered as a useful means to examine how one’s beliefs were firmly held across the time or changed after the focus group. For analysis to be consistent, the researcher engaged in a code-recode (indexing-reindexing) procedure (i.e., coding/indexing was done twice with a short interval as often done as test-retest reliability test in a quantitative study) (Brink, 1991).

Finally, confirmability can be demonstrated by maintaining neutrality of a researcher’s conception by withholding bias and present analysis and interpretation of the findings in a way that confirms participants’ true experience (Lincoln & Guba, 1985). Using methodological triangulation, findings of a qualitative study were used to compensate or compliment those of a quantitative study, vice versa. Thus, the researcher’s preconception that confirms convenient findings and disconfirms others could be minimised (Knafl & Breitmayer, as cited in Nolan & Behi, 1995).
Ethical Guidelines

The following ethical issues were identified in the literature (Burns & Grove, 1993; May, 1991; Patton, 1990; Polit & Hungler, 1991), and were considered in conducting this research.

First, the decision to participate in this study was voluntary. A cover letter including a description of the purpose of the study, selection process of the subjects, and the procedure for the data collection were given to the participants prior to commencement of data collection. The cover letter also included an explanation of possible benefits and risks/discomforts. Participants were assured that a decision to not participate in the study would not affect their employment/student status in any way. Consent to participate was assumed by the survey return for the main quantitative study. However, written consent forms were obtained from the participants for the focus group, as it involved more disclosure of personal experience and feelings. In addition, participants were assured that they might withdraw from this study without penalty until the time that the data had been analysed.

Second, the participants cooperating in the quantitative study remained anonymous. Therefore, they were instructed not to write their names on the questionnaires in the quantitative study. Their responses were entered into a computer with codes and analysed as group data.

Third, confidentiality of the data was maintained. The focus group was held in a place where privacy was maintained. Moreover, the participants were identified with pseudonyms throughout data collection and analysis processes, and their identifiable personal data have not been disclosed in any way. The security of the data has been ensured by placing it in a locked cabinet in the School of Nursing, and by prohibiting access by others without the researcher’s permission. The data entered into a computer were protected by a password. Those permitted to access the data including supervisors and research consultants were asked for preservation of confidentiality. The data will be kept for 7 years in locked storage after the completion of the study, and then destroyed in accordance with the university guidelines, once approvals are received from the Head of The School of Nursing and the participating hospitals.
Fourth, the purpose and description of the study were submitted to the ethics committees in all the participating institutions, and their approval had been obtained.

Next, there was no manipulation of the participants or the data collected. The participants were not coerced to respond to all the questions, or to provide desirable data.

It was considered that participating in the focus group was unlikely to cause any risks to the participants. However, the participants were informed that they would be allowed to withdraw from the focus group without penalty in the unlikely event that the participation caused them discomfort. All the participants were given the student researcher’s contact details and asked to contact the researcher should distress occur as a consequence of participation. In such an event, possible options to resolve the problems such as seeking professional assistance from a hospital counsellor would be discussed with the participants, if necessary. The student researcher is a registered nurse and would be able to identify services in the community should such an issue arise.

Summary

This chapter presented the methods used for this study. The flowchart of the study methods is summarised in Figure 5.5. The methods for the quantitative study were designed to accurately capture the relationships between the variables of interest by carefully controlling for possible interference of other variables and by the use of various statistical methods. On the other hand, the qualitative approach was designed to improve external validity of the results by adding contextual meanings elicited from nurse participants. This methodological triangulation was hoped to compensate weaknesses of each methodological approach, and to provide more meaningful and trustworthy results.

The following two chapters present the results of the quantitative study. The results of the focus group are not presented in an independent chapter. Instead, the focus group results are integrated in the discussion chapter to support the interpretations of the survey findings. This is because the purpose of the focus group was to explore the meaning behind the relationships identified in the quantitative study.
Quantitative study: Correlational design

Questionnaire development

- Initial questionnaire design
- Judgemental panel review (Content validity exercise)
- Pilot study
- Revision

Data collection: Survey

Quantitative data analysis

Preliminary analysis
- Factor analysis: Establishing the construct validity of the instruments
- Reliability analysis for the instruments (Cronbach’s alpha)
- Descriptive statistics: means, standard divisions and Pearson correlation

Hypothesis testing
- Hypotheses 1 & 3: Hierarchical regression analysis
- Hypothesis 2: A paired t-test
- Hypotheses 4 to 7: Hierarchical and moderated regression analysis
- Hypotheses 8 & 9: Polynomial regression and response surface analysis

Qualitative inquiry: Focus group to explore the quantitative results

- Focus group
- Transcription check
- Data analysis: Framework method

Figure 5.5. Flowchart of the study methods
CHAPTER 6: THE RESULTS OF PRELIMINARY ANALYSIS

Introduction

This chapter presents the results of the preliminary analysis, which served as the basis of hypothesis testing. First, the response rate and the results of the demographic analysis are reported. Then, the reliability and the validity of the questionnaire are presented. Finally, the results of the descriptive statistics and correlation analysis are introduced.

The Response Rate

The final version of the questionnaires (see Appendix C) was distributed to 943 nurses in two hospitals and the School of Nursing at one university in Victoria, Australia. In total, 362 questionnaires were returned. Of these, seven questionnaires were returned from respondents, who did not meet the sample inclusion criteria (such as the division of their registration and areas of practice). Thus, these questionnaires were removed from the analysis. In addition to the exclusion of the above questionnaires, a further three questionnaires were removed from the analysis as several sections were not completed. Finally, six questionnaires were excluded from the analysis as they were returned after data analysis had commenced. This left 346 usable questionnaires. A total response rate for the usable data was 36.7%. Of these, 133 were returned from the university student nurses with a response rate of 83.6%, and 135 questionnaires (the response rate of 23.1%) and 78 questionnaires (the response rate of 39%) were returned from the metropolitan and rural hospitals respectively.

Demographic Analysis

The summary statistics of respondents’ demographic characteristics and comparisons with the Australian national data set obtained from “Nursing Labour Force 2001” (2003) are presented in Table 6.1. A sample t-test and Chi-square test were used for comparisons.
Table 6.1
Demographic data of the study participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>The study sample</th>
<th>National data</th>
<th>Comparison*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>92.7% (N = 316)</td>
<td>91.8%</td>
<td>$\chi^2(1, N = 341) = .342, p = .56$</td>
</tr>
<tr>
<td>Male</td>
<td>7.3% (N = 25)</td>
<td>8.2%</td>
<td></td>
</tr>
<tr>
<td>Work status (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time (≥ 35hrs/w)</td>
<td>58.9% (N = 201)</td>
<td>48.3%</td>
<td>$\chi^2(1, N = 341) = 15.47, p &lt; .01$</td>
</tr>
<tr>
<td>Part-time (&lt; 35hrs/w)</td>
<td>41.1% (N = 140)</td>
<td>51.7%</td>
<td></td>
</tr>
<tr>
<td>Age (Mean)</td>
<td>33.63 years old</td>
<td>41.4 years old</td>
<td>$t(341) = -15.22, p &lt; .001$</td>
</tr>
<tr>
<td></td>
<td>(≤ 30 years old)</td>
<td></td>
<td>$\chi^2(3, N = 342) = 202.59, p &lt; .01$</td>
</tr>
<tr>
<td></td>
<td>30 – 39</td>
<td>28.7% (N = 98)</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>40 – 49</td>
<td>21.6% (N = 74)</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>≥ 50</td>
<td>7.0% (N = 24)</td>
<td>22%</td>
</tr>
<tr>
<td>Length of experience (Mean)</td>
<td>10.33 years</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Currently studying postgraduate courses (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47.1% (N = 157)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>No</td>
<td>52.9% (N = 176)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Educational qualifications of nurses not currently studying (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>22.2% (N = 39)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Degree</td>
<td>38.6% (N = 68)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Postgraduate certificate/diploma</td>
<td>34.7% (N = 61)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Master</td>
<td>4.5% (N = 8)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Clinical Specialty (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical/Surgical</td>
<td>27.8% (N = 96)</td>
<td>28.7%</td>
<td>$\chi^2(4, N = 345) = 141.228, p &lt; .01$</td>
</tr>
<tr>
<td>ICU/Emergency</td>
<td>27.8% (N = 96)</td>
<td>10.1%</td>
<td></td>
</tr>
<tr>
<td>Gerontology</td>
<td>2.0% (N = 7)</td>
<td>12.4%</td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>6.6% (N = 23)</td>
<td>6.3%</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>35.7% (N = 123)</td>
<td>42.5%</td>
<td></td>
</tr>
<tr>
<td>Clinical position (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical</td>
<td>90.4% (N = 312)</td>
<td>83.2%</td>
<td>$\chi^2(1, N = 345) = 12.919, p &lt; .01$</td>
</tr>
<tr>
<td>Others (incl. NUM)</td>
<td>9.6% (N = 33)</td>
<td>16.8%</td>
<td></td>
</tr>
<tr>
<td>Workplace location (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan hospital</td>
<td>79.3% (N = 272)</td>
<td>73.6%</td>
<td>$\chi^2(1, N = 343) = 5.736, p = .02$</td>
</tr>
<tr>
<td>Rural hospital</td>
<td>20.7% (N = 71)</td>
<td>26.4%</td>
<td></td>
</tr>
<tr>
<td>Employment status (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent staff</td>
<td>95.4% (N = 329)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Casual staff</td>
<td>4.6% (N = 16)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. 1. The total sample size ranged from 333 to 345 due to missing values. 2. *Comparison statistics between the study sample and the national data are presented. 3. ‘—’ indicates no comparable data with the sample are available from Australian Nursing Labour Force 2001. 4. NUM refers to nurse unit manager.
Table 6.1 shows that the majority of participants were female and the gender composition was not different from the national data. The majority of participants were employed full-time and this figure was statistically different from the national data, which indicated the majority of Australian nurses employed part-time. The mean age of the participants was 33.63 years old and they had an average of 10 years of clinical experience. Compared with the national data, the participants comprised predominantly younger nurses. In fact, the age composition of participants showed that the majority were less than 30 years old. More than half the participants were studying toward or had obtained postgraduate qualifications. The portion of nurses currently studying or had completed postgraduate courses are not available in the national data set. However, considering that only 7.7% of nurses had completed university degrees (both undergraduate and postgraduate) in 2000 (Nursing Labour Force 2001, 2003), it is reasonable to assume that participants were over-represented by university educated nurses. The demographics also showed that the participants were over-represented by nurses working in an ICU or emergency department, while being under-represented by those in gerontology. Finally, most participants were working as a permanent clinical nurse in metropolitan hospitals and a small number of the participants were represented by (associate) (nurse unit managers (NUMs), nurse researchers and educators. The compositions of participants in terms of their clinical position and workplace location were statistically different from those of the national data.

Factor Analysis

The instruments used in this thesis were factor-analysed to establish construct validity of the instruments. Principal-axis factor analysis with orthogonal (varimax) rotation was used.

*Porter Nursing Image Scale*

The Porter Nursing Image Scale was used to measure nurses’ self-concept and their perceptions of the public image of nurses. The scores of these two variables were pooled to establish a mutual factor solution between the variables. First, preliminary factor analysis was conducted with the variable identifier (nurses’ self-concept = 0, the perceived public image of nurses = 1) included in the analysis. Assumptions of factor analysis were also examined. Normal distribution test showed that the score-
distributions of some items such as ‘warm’ and ‘compassionate’ were negatively skewed, while the distributions of some other items including ‘professional’ were peaked. Hence, the relationships between these items and those, which showed normal distribution, were examined to see if there were any curvilinear relationships. There was no indication of the curvilinear relationship, which satisfied the assumption of factor analysis. After removing outlier cases, preliminary factor analysis was run. Anti-image, Kaiser-Meyer-Olkin (KMO), Bartlesst’s test and correlation analysis showed factorability. Squared multiple correlation indicated absence of multicollinearity and outliers among the instrumental items. The results in this analysis showed three factor solutions (see Table 6.2), which was almost identical to the original factor solution reported by Porter and Porter (1991).

Table 6.2

Preliminary factor analysis of the Porter Nursing Image Scale with the variable identifier.

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor I</th>
<th>Factor II</th>
<th>Factor III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible</td>
<td>.63</td>
<td>.38</td>
<td>.27</td>
</tr>
<tr>
<td>Rational</td>
<td>.61</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td>Professional</td>
<td>.60</td>
<td>.19</td>
<td>.41</td>
</tr>
<tr>
<td>Competent</td>
<td>.58</td>
<td>.38</td>
<td>.40</td>
</tr>
<tr>
<td>Intelligent</td>
<td>.58</td>
<td>.17</td>
<td>.52</td>
</tr>
<tr>
<td>Logical</td>
<td>.55</td>
<td>.15</td>
<td>.49</td>
</tr>
<tr>
<td>Respectful</td>
<td>.52</td>
<td>.50</td>
<td>.17</td>
</tr>
<tr>
<td>Organised</td>
<td>.50</td>
<td>.43</td>
<td>.29</td>
</tr>
<tr>
<td>Nurturing</td>
<td>-.04</td>
<td>.83</td>
<td>.06</td>
</tr>
<tr>
<td>Warm</td>
<td>.12</td>
<td>.79</td>
<td>.02</td>
</tr>
<tr>
<td>Patient</td>
<td>.16</td>
<td>.71</td>
<td>.03</td>
</tr>
<tr>
<td>Compassionate</td>
<td>.14</td>
<td>.69</td>
<td>.09</td>
</tr>
<tr>
<td>Powerful</td>
<td>.09</td>
<td>.07</td>
<td>.74</td>
</tr>
<tr>
<td>Leader</td>
<td>.33</td>
<td>-.09</td>
<td>.73</td>
</tr>
<tr>
<td>In control</td>
<td>.31</td>
<td>.13</td>
<td>.60</td>
</tr>
<tr>
<td>Confident</td>
<td>.34</td>
<td>.25</td>
<td>.59</td>
</tr>
<tr>
<td>Independent</td>
<td>.40</td>
<td>.05</td>
<td>.58</td>
</tr>
<tr>
<td>Follower (Reversed)</td>
<td>.27</td>
<td>-.22</td>
<td>.28</td>
</tr>
<tr>
<td>Compromising</td>
<td>.21</td>
<td>.21</td>
<td>.21</td>
</tr>
<tr>
<td>Variable identifier</td>
<td>-.59</td>
<td>.26</td>
<td>-.26</td>
</tr>
</tbody>
</table>

*Note. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.*

Factor I in Table 6.2 corresponds to the intrapersonal ability, factor II to the interpersonal relations, and factor III to the interpersonal power in the original factor solution. The loadings of variable identifier showed that nurses’ self-concept was
rated more positively than their public image in the areas of intrapersonal ability and the interpersonal power. In contrast, they showed that nurses perceived their positive public image more positively than how they saw themselves in the interpersonal relations factor. These results suggest that the nurses saw themselves as being more professional, independent and competent than how they thought the public held of them, whereas they considered the public view them being more caring than their own view of themselves.

The final factor analysis was done by removing the variable identifier and retaining the items, which loaded ≥ .40. As a result, two items, compromising and follower, were excluded from the instrument and two factors emerged with an eigenvalue greater than 1.00 (see Table 6.3).

Table 6.3
Final factor analysis of the Porter Nursing Image Scale

<table>
<thead>
<tr>
<th>Instrumental items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor I</td>
</tr>
<tr>
<td>Leader</td>
<td>.76</td>
</tr>
<tr>
<td>Intelligent</td>
<td>.76</td>
</tr>
<tr>
<td>Logical</td>
<td>.72</td>
</tr>
<tr>
<td>Independent</td>
<td>.69</td>
</tr>
<tr>
<td>Professional</td>
<td>.68</td>
</tr>
<tr>
<td>Confident</td>
<td>.67</td>
</tr>
<tr>
<td>In control</td>
<td>.67</td>
</tr>
<tr>
<td>Competent</td>
<td>.66</td>
</tr>
<tr>
<td>Rational</td>
<td>.65</td>
</tr>
<tr>
<td>Professional</td>
<td>.61</td>
</tr>
<tr>
<td>Responsible</td>
<td>.59</td>
</tr>
<tr>
<td>Organised</td>
<td>.53</td>
</tr>
<tr>
<td>Warm</td>
<td>.82</td>
</tr>
<tr>
<td>Nurturing</td>
<td>.78</td>
</tr>
<tr>
<td>Patient</td>
<td>.72</td>
</tr>
<tr>
<td>Compassionate</td>
<td>.70</td>
</tr>
<tr>
<td>Respectful</td>
<td>.42</td>
</tr>
<tr>
<td>Follower (Reversed)</td>
<td>-</td>
</tr>
<tr>
<td>Compromising</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

The retained 17 items loaded .53 to .82. Comrey and Lee (1992) suggest that factor loadings of over .71 are considered excellent, .63 as very good, .55 as good, .45 as fair and .32 as poor. Examining the factor loadings of the 17 items, it was
considered that most of them loaded well. This two-factor-solution explained the total variance of 50.15%. Factor I consisted of 12 items, which characterised power status, professionalism, competence and rationality. As these aptitudes are necessary for leadership, this factor was named ‘leadership aptitudes’. Factor II comprised five items, which were compassionate, respectful, patient, nurturing and warm. These characteristics correspond to the empathic qualities necessary to care for those in need for support and comfort. Hence, this factor was termed ‘caring aptitudes’. Table 6.3 shows that four of the factor I items (i.e., organised, responsible, competent and rational) also loaded highly on factor II. Three of these four factors were originally categorised as the intrapersonal ability in the Porter Nursing Image Scale. The results in this final factor analysis, therefore, suggest that these abilities are also important components of a caring aptitude.

**Nurses’ Role Conception Scale**

The responses on nurses’ role conception and their perception of their actual nursing roles were combined with identifiers assigned to each variable (nurses’ role conception = 0, actual nursing role = 1). Although sample distribution on some items showed either positive or negative skewness, none of the relationships between these variables were identified as being curvilinear. After eliminating multivariate and univariate outliers, preliminary factor analysis was conducted. The statistics suggested factorability, absence of multicollinearity and absence of low correlation between the instrument items. The initial factor analysis extracted four factors. Factor III consisted of no variables with the factor loadings of $\geq 0.40$, and factor IV was loaded with only one variable with a loading of 0.60. Thus, three factor solutions were attempted. The results of these three factor solutions with the variable identifier are presented in Table 6.4.

Factor I consisted of eight items, which were related to professional nursing skills such as patient education and decision-making. The loading of the variable identifier indicated that the nurses’ role conception on the use of these nursing skills was higher than the roles they thought they were actually taking. Factor II encompassed two items, which were originally meant to measure how strongly nurses desired to assist patients’ daily activity and hygiene measures. Consistent with the results of the pilot study, the scores on these two items were particularly low compared with those on other items. Moreover, they were negatively correlated with
the items in factor I. These results, therefore, suggest that factor II items are more likely to measure nurses’ orientation to task delegation, rather than their desire to engage in basic patient care. The loading of this variable identifier suggests that there was not much difference between the nurses’ role conception and their perceptions of the actual roles. Factor III consisted of two items, but the loading of these items fell below .40. The variable identifier indicated that the nurses viewed themselves involved in more direct patient care and technical procedures than they desired.

Table 6.4
Preliminary factor analysis of the Nurses’ Role Conception Scale with the variable identifier.

<table>
<thead>
<tr>
<th>Instrument items (Summary statements)</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor I</td>
</tr>
<tr>
<td>Policy on work conditions</td>
<td>.79</td>
</tr>
<tr>
<td>Discharge decision</td>
<td>.69</td>
</tr>
<tr>
<td>Provide emotional support</td>
<td>.64</td>
</tr>
<tr>
<td>Policy on hospital support (Reversed)</td>
<td>.61</td>
</tr>
<tr>
<td>Develop nursing careplan</td>
<td>.59</td>
</tr>
<tr>
<td>Initiate referral</td>
<td>.53</td>
</tr>
<tr>
<td>Patient education (Reversed)</td>
<td>.52</td>
</tr>
<tr>
<td>Follow Dr's order (Reversed)</td>
<td>.40</td>
</tr>
<tr>
<td>Assist patient hygiene</td>
<td>-.15</td>
</tr>
<tr>
<td>Assist daily activities</td>
<td>-.25</td>
</tr>
<tr>
<td>Direct care</td>
<td>.00</td>
</tr>
<tr>
<td>Perform technical procedures</td>
<td>-.00</td>
</tr>
<tr>
<td>Variable identifier</td>
<td>-.60</td>
</tr>
</tbody>
</table>

*Note.* The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

Factor analysis was re-run without the variable identifier. The factor loadings were also adjusted to ≥ .40. Three-factor solution accounted for the total variance of 42.17%. The results showed that the item concerning technical procedure did not have a major loading on any of the factors. Hence, the factor III consisted of only one item concerning direct patient care. As a factor with one item is unstable (Tabachnick & Fidell, 2001), a two-factor solution was sought in the final analysis. As shown in Table 6.5, this eliminated two items, which concerned technical procedures and direct patient care. Factor I consisted of eight items concerning ‘the use of nursing skills’ as
in the preliminary analysis. In the same way, factor II consisted of two items expressing nurses’ orientation to the ‘task delegation’. This two-factor solution accounted for a total variance of 37.08%.

Table 6.5
Final factor analysis of the Nurses’ Role Conception Scale

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor I</th>
<th>Factor II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Summary statements)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy on work conditions</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>Discharge decision</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>Provide emotional support</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>Policy on hospital support (Reversed)</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>Develop nursing careplan</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Initiate referral</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>Patient education (Reversed)</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Follow Dr’s order (Reversed)</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>Assist patient hygiene</td>
<td></td>
<td>.77</td>
</tr>
<tr>
<td>Assist daily activities</td>
<td></td>
<td>.66</td>
</tr>
<tr>
<td>Perform technical procedures</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Direct care</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

After having established the construct validity of this instrument, the scoring system of the factor II items was reviewed. This was because these items measured nurses’ desire for the task delegation, instead of their desire for involvement in basic patient care. Therefore, the scores on the factor II variables were reversed in a way that higher scores reflected nurses’ stronger desire for task delegation. This contributes to the consistency of the scoring system in the Nurses’ Role Conception Scale.

To make sure that the change in the scoring system did not influence the results of the factor analysis, re-examination of the factor solution was conducted. Prior to this analysis, the missing values were re-calculated based on the reversed scores using the EM method. The results of the factor analysis were consistent with those presented in Table 6.5. But there were slight changes in the loadings of each item (see Appendix M).
**Work Value Scale**

The responses on the nurses’ work values and their perception of the environmental supplies were pooled and the variable identifiers were assigned (the work values = 0, the environmental supplies = 1). There was no violation of the assumptions of the factor analysis. Therefore, preliminary factor analysis was run with all the instrument items and the variable identifiers. The initial analysis showed five factors with the eigenvalues of greater than one. The total variance of this solution was 48.75%. As the factor IV and V consisted of only a few items, the number of the factors to be extracted were gradually reduced until the instrument achieved a more succinct solution with minimum loss of variance. As a result, a three-factor solution was chosen with the variance of 43.49%.

As shown in Table 6.6, the majority of items belonged to factor I. Factor I represented the nurses’ needs for ‘professional rewards’ such as respect, higher income, career advancement and autonomous practice (expressed by such items as developing own methods, involved in problem solving, and being creative and responsible). According to the loading of this variable identifier, the nurses’ needs on this dimension were higher than the supplies (or supports) they thought they actually received from their environment. Items in factor II were characterised as ‘professional challenges’, which included the use of professional knowledge and skills, intellectual stimulation, involvement with others and independent practice. Factor III represented ‘organisational support’ such as job security, having clear rules and a routine to follow at work, and working for a respectable superior. The variable identifiers in factors II and III suggest that there were few differences between nurses’ work values and their perception of the environmental supplies on these dimensions. However, nurses’ desires for the professional challenges and obtaining organisational support were slightly higher than actual challenges and support they perceived to receive from the environment.
Table 6.6
Preliminary factor analysis of the Work Value Scale with the variable identifier.

<table>
<thead>
<tr>
<th>Instrument items (Summary statements)</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor I</td>
</tr>
<tr>
<td>Reward with recognition</td>
<td>.73</td>
</tr>
<tr>
<td>Give opportunity for higher income</td>
<td>.66</td>
</tr>
<tr>
<td>Give responsibility for challenge</td>
<td>.63</td>
</tr>
<tr>
<td>Require problem solving</td>
<td>.63</td>
</tr>
<tr>
<td>Give comfortable work conditions</td>
<td>.60</td>
</tr>
<tr>
<td>Give a feeling of accomplishment</td>
<td>.57</td>
</tr>
<tr>
<td>Permit to develop own methods</td>
<td>.55</td>
</tr>
<tr>
<td>Give career advancement chance</td>
<td>.53</td>
</tr>
<tr>
<td>Require creativeness</td>
<td>.52</td>
</tr>
<tr>
<td>Respected by others</td>
<td>.51</td>
</tr>
<tr>
<td>Provide variety in duties</td>
<td>.50</td>
</tr>
<tr>
<td>Make social contribution</td>
<td>.45</td>
</tr>
<tr>
<td>Working with congenial associates</td>
<td>.44</td>
</tr>
<tr>
<td>Require meeting with others</td>
<td>-.12</td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
</tr>
<tr>
<td>Give intellectual stimulation</td>
<td>.53</td>
</tr>
<tr>
<td>Encourage knowledge/skills</td>
<td>.18</td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
</tr>
<tr>
<td>Use educational background</td>
<td>.34</td>
</tr>
<tr>
<td>Permit working independently</td>
<td>.33</td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
</tr>
<tr>
<td>Have clear rules/procedures</td>
<td>-.08</td>
</tr>
<tr>
<td>Permits regular routine</td>
<td>.24</td>
</tr>
<tr>
<td>Work for respectable superiors</td>
<td>.45</td>
</tr>
<tr>
<td>Give job security</td>
<td>.29</td>
</tr>
<tr>
<td>Variable identifier</td>
<td>-.55</td>
</tr>
</tbody>
</table>

*Note.* The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

The final analysis was run without the variable identifiers and by retaining the item loadings of ≥ .40. As shown in Table 6.7, three factors emerged and the structure of the instrument did not differ from that in Table 6.6, except that the item ‘permit working independently’ has been eliminated because of its small loadings on the factors. Therefore, the preliminary interpretations of the three factors, which were ‘professional rewards’, ‘professional challenges’, and ‘organisational support’ were retained for factor I to factor III respectively. The results also showed that three items ‘Give a feeling of accomplishment’, ‘Work for respectable superiors’ and ‘Give intellectual stimulation’ loaded highly across two factors. These results suggest that the items concerning intellectual stimulation and a feeling of accomplishment are considered as important factors in both professional rewards and challenges, while working for respectable superiors is an important factor of both professional rewards
and the organisational support. The total variance explained by these three factors was 44.01%.

Table 6.7
Final factor analysis of the Work Value Scale

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor I</th>
<th>Factor II</th>
<th>Factor III</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Summary statements)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give responsibility for challenge</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Require problem solving</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reward with recognition</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give opportunity for higher income</td>
<td>.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give comfortable work conditions</td>
<td>.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Require creativeness</td>
<td>.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permit to develop own methods</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give a feeling of accomplishment</td>
<td>.56</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>Give career advancement chance</td>
<td>.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide variety in duties</td>
<td>.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respected by others</td>
<td>.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make social contribution</td>
<td>.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working with congenial associates</td>
<td>.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Require meeting with others</td>
<td></td>
<td></td>
<td>.60</td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give intellectual stimulation</td>
<td>.52</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>Encourage knowledge/skills</td>
<td></td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use educational background</td>
<td></td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>Have clear rules/procedures</td>
<td></td>
<td></td>
<td>.57</td>
</tr>
<tr>
<td>Permits regular routine</td>
<td></td>
<td></td>
<td>.56</td>
</tr>
<tr>
<td>Work for respectable superiors</td>
<td>.46</td>
<td></td>
<td>.47</td>
</tr>
<tr>
<td>Give job security</td>
<td></td>
<td></td>
<td>.43</td>
</tr>
<tr>
<td>Permit working independently</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Reversed)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

Collective Self-esteem Scale

The membership factor of the Collective Self-esteem Scale was administered to participants. Histogram analysis showed that responses of all four items in this factor were negatively skewed. However, none of the relationships between the items were curvilinear. Thus, preliminary factor analysis was conducted with all four items. Prior to analysis, outlier cases were removed. The statistics suggested factorability and absence of multicollinearity and item outliers. One factor solution was obtained in this analysis. While three items were loaded greater than .40, a reversed item ‘I often
feel I do not contribute sufficiently to the nursing profession’ loaded .37. The final factor analysis was conducted by suppressing items, which had a loading of less than .40. As a result, three items excluding ‘contribution’ item were retained, forming one factor. The results of the factor analysis are presented in Table 6.8. The total variance explained by this factor solution was 33.85%.

Table 6.8
Final factor analysis of the Collective Self-esteem Scale

<table>
<thead>
<tr>
<th>Instrument items (Summary statements)</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worthy member</td>
<td>.77</td>
</tr>
<tr>
<td>Much to offer (Reversed)</td>
<td>.60</td>
</tr>
<tr>
<td>Cooperative participant</td>
<td>.52</td>
</tr>
<tr>
<td>Contribute sufficiently (Reversed)</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.*

*Task Performance Scale*

The assumptions of factor analysis were tested first. Although a Kolmogorov-Smirnov test showed that none of the variables were normally distributed, pairwise scatterplots suggested that there was no indication of curvilinear relationships between the responses on the instrument items. This supported the assumption of a linear relationship between variables in factor analysis. A preliminary factor analysis also suggested factorability and absence of the item outlier. Therefore, all the items were entered to factor analysis. The initial factor analysis without case outliers extracted three factors with the factor I consisting of four items, the factor II with three items, and the factor III with two items respectively. All the items loaded greater than .4 and explained the total variance of 50.74%. However, the third factor in this analysis showed a low reliability of .55 (Chronbach’s alpha) and made a small contribution to the total variance. Hence, two factor solutions were sought. This resulted in eliminating two items belonging to the factor III in the previous analysis. The rest of the items loaded greater than .55, which was considered good (Comrey & Lee, 1992). The results of this analysis are presented in Table 6.9. The total variance accounted for 42.72%. Factor I represented the items concerning organisational objectives and criteria, hence this factor was named ‘organisational performance
criteria’. The items in factor II are more concerned with professional competency and expertise, and measured how well nurses performed or fulfilled their roles as professionals. Therefore, this factor was termed ‘professional competency’.

Table 6.9
Final factor analysis of the Task Performance Scale

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Summary statements)</td>
<td>Factor I</td>
</tr>
<tr>
<td>Achieve job objectives</td>
<td>.82</td>
</tr>
<tr>
<td>Meet performance criteria</td>
<td>.75</td>
</tr>
<tr>
<td>Perform tasks well</td>
<td>.73</td>
</tr>
<tr>
<td>Plan to achieve objectives/timelines</td>
<td>.69</td>
</tr>
<tr>
<td>Demonstrate expertise (Reversed)</td>
<td></td>
</tr>
<tr>
<td>Fulfil job requirements (Reversed)</td>
<td></td>
</tr>
<tr>
<td>Competent in job/tasks (Reversed)</td>
<td></td>
</tr>
<tr>
<td>Manage more responsibility</td>
<td>-</td>
</tr>
<tr>
<td>Suitable for higher role</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.*

*Modified Withdrawal Cognitions Scale*

The last instrument to be factor analysed was the modified withdrawal cognition scale. This scale was meant to measure nurses’ turnover intention in two occasions, which was their intention to quit their current job to look for another nursing job and their intention to quit nursing itself. After confirming that all assumptions of factor analysis were met, the initial factor analysis was run. Despite the fact that this scale was constructed to measure two different aspects of nurses’ turnover intention, only one factor emerged as shown in Table 6.10. An item ‘I will not look for a new nursing job in the near future’ (the score was reversed) loaded less than .40. Thus, this item was eliminated from the scale. The rest of the items had good loadings. The total variance explained by this solution was 39.78%.
Table 6.10

Final factor analysis of the modified Withdrawal Cognition Scale

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking of quitting nursing</td>
<td>.75</td>
</tr>
<tr>
<td>Searching a non-nursing job</td>
<td>.74</td>
</tr>
<tr>
<td>Intention to quit organisation (Reversed)</td>
<td>.66</td>
</tr>
<tr>
<td>Intention to quit nursing (Reversed)</td>
<td>.66</td>
</tr>
<tr>
<td>Thinking of quitting organisation</td>
<td>.54</td>
</tr>
<tr>
<td>Searching a new nursing job (Reversed)</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* Only the loadings of ≥ .40 are presented. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.

The results of factor analysis showed that many of the modified instruments demonstrated different constructs (factor solutions) from those identified in the original instruments or ways that the instruments were designed. For example, the Nurses’ Role Conception Scale was originally designed to measure how much nurses desire to take decision making and caring roles. However, factor analysis suggested that the instrument measured how much nurses desired to utilise their nursing skills and to delegate basic tasks to their subordinates. Identification of the different constructs, nevertheless, did not indicate that the instrument no longer measures nurses’ role conception or their perception of the actual role they engage in. The subsequent analysis was, therefore, conducted based on the new constructs identified in this thesis.

**Reliability of the Instruments**

Chronbach’s alpha was calculated to establish the internal consistency of the instruments. The results are presented in Table 6.11.
Table 6.11
Reliability of the instruments.

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Variables</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Factor I</td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>.89</td>
<td>.87</td>
</tr>
<tr>
<td>Public image</td>
<td>.91</td>
<td>.91</td>
</tr>
<tr>
<td>Role conception</td>
<td>.62</td>
<td>.65</td>
</tr>
<tr>
<td>Actual role</td>
<td>.73</td>
<td>.74</td>
</tr>
<tr>
<td>Work values</td>
<td>.89</td>
<td>.89</td>
</tr>
<tr>
<td>Environmental supplies</td>
<td>.89</td>
<td>.88</td>
</tr>
<tr>
<td>Membership esteem</td>
<td>.52</td>
<td>-</td>
</tr>
<tr>
<td>Job performance</td>
<td>.73</td>
<td>.81</td>
</tr>
<tr>
<td>Turnover intention</td>
<td>.79</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. N = 342 – 346.

Many of the instruments had reasonable reliability. As to the Porter Nursing Image Scale, its reliability in measuring both nurses’ self-concept and their perception of the public image were well above .80. With regard to the Nurses’ Role Conception Scale, its reliability in measuring nurses’ perception of their actual role was over .70, whereas the scale measuring nurses’ role conception had an only moderate reliability of .62. The overall reliability of the Work Value Scale measuring both nurses’ work value and their perception of the environmental supplies was found to be high. Nevertheless, the reliabilities of factors II and III in both measures tended to decrease, as the number of the items in the factors decreased. As for the membership factor of the Collective Self-esteem Scale, its reliability fell below .60, despite the fact that this is a well-established scale in terms of both the construct validity and the reliability (Luhtanen & Crocker, 1992). The Task Performance Scale had a fair reliability of .73 as a whole. The reliability of factor I was over .80, while its reliability in the factor II showed moderate internal consistency of .64. Finally, the Modified Withdrawal Cognition Scale is found to have a good reliability of .79.

Descriptive Statistics

There were no statistically significant differences between the responses of the university sample and the hospital sample in all the variables (t-scores ranges from $t(342) = -1.38, p = .17$ to $t(342) = -0.14, p = .89$). Therefore, the responses of these samples were combined and the rest of the analysis was run with the total sample. The means and the standard deviations of the variables and the correlation between the
variables are presented in Table 6.12. More detailed descriptive statistics at the factor level are inserted in Appendix N.

Table 6.12
The means/standard deviations of and the correlation between the variables

<table>
<thead>
<tr>
<th></th>
<th>Mean/SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nurse self-concept</td>
<td>4.96/0.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Public image</td>
<td>4.48/0.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.37**</td>
</tr>
<tr>
<td>3. Role conception</td>
<td>5.02/0.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.39** .07</td>
</tr>
<tr>
<td>4. Actual role</td>
<td>4.01/0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.33** .20** .28**</td>
<td></td>
</tr>
<tr>
<td>5. Work values</td>
<td>4.89/0.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.42** .26** .39** .12**</td>
<td></td>
</tr>
<tr>
<td>6. Environmental supplies</td>
<td>4.23/0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.38** .38** .06</td>
<td>.49** .39**</td>
</tr>
<tr>
<td>7. Collective self-esteem</td>
<td>5.19/0.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.53** .32** .30** .21** .37** .36**</td>
<td></td>
</tr>
<tr>
<td>8. Job performance</td>
<td>4.79/0.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.46** .21** .30** .18** .29** .22** .43**</td>
<td></td>
</tr>
<tr>
<td>9. Turnover intention</td>
<td>2.37/1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.28** .27** .15** .37** .18** .50** .36** .20**</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* 1. ** Correlation is significant at the .01 level (Two-tailed). 2. * Correlation is significant at the .05 level (Two-tailed). 3. N = 342 – 346. 4. The scores range from 1 to 6.

Table 6.12 shows that nurses rated both their self-concept and their perception of the public image positively. However, the nurses’ self-concept was higher in terms of the overall nursing image (M = 4.96) and the leadership aptitude (M = 4.88) than their perception of the public image (M = 4.48 and 4.17 respectively). As for the individual items (see Figure 6.1 later in this chapter), nurses rated their self-concept of being leaders (M = 4.35) particularly higher than the perceived public image (M = 3.05), followed by the images of being independent (M = 4.79 for nurses’ self-concept to M = 3.64 for the public image), intelligent (M = 5.01/M = 4.09), professional (M = 5.39/M = 4.51), and logical (M = 5.10/M = 4.28). With reference to the image of nursing as being powerful, nurses rated both their self-concept and the public image of them low (M = 3.67 and 3.09 respectively). In contrast to the leadership image, nurses rated their perception of their public image of nurses as being caring (M = 5.22) more positively than their self-image of being caring (M = 5.16).

As to nurses’ perception of their roles, the results revealed that nurses had higher desires to use their professional nursing skills (M = 5.13) as well as to delegate basic tasks to other personnel (M = 4.60) than they did in actual practice. The mean scores of the actual roles in the use of nursing skills and the task delegation were 4.04 and 3.88 respectively. The results indicated that nurses perceived a poorer fit in the use of their skills than in the task delegation practice. In particular, large discrepancies
were observed in the areas of providing patient education (role conception/actual role = 4.86/3.56), decision making on work conditions policy (5.35/3.45) and decision making on hospital support policy (4.90/3.15) (see Figure 6.2 later in this chapter).

Nurses also rated their needs for professional rewards, challenges and organisational support higher than the environmental supplies they perceived to receive. The overall mean of nurses’ work values was 4.89 as compared with the mean score of 4.23 for the overall environmental supplies. The mean scores of nurses’ needs in professional rewards, challenge and organisational support were 4.83, 5.21 and 4.75 respectively compared with those scores on the environmental supplies, which were 3.99, 4.82 and 4.39 respectively. These results indicated that nurses’ need for professional challenge was particularly higher among their work values. The results also suggested that nurses perceived a greater incompatibility between their work values and the environmental supplies in the area of professional rewards. In particular, large discrepancies were observed in the areas of having opportunity for earning higher income (the work values/the environmental supplies = 4.67/3.10) and reward with recognition (4.97/3.51). While most aspects of the value-supply fit were characterised as high value and low supply relationships, the results showed that nurses perceived they had more rules and procedures to follow in practice ($M = 4.49$) than they desired ($M = 4.38$) (see Figure 6.3 later in this chapter).

Table 6.12 indicated that overall nurses’ needs were higher than what they actually received from their environment. These results were also reflected in the distributions of these scores. For instance, the scores of nurses’ self-concept, their role conception and work values tended to gather in a small range of 4.00 to 6.00 with medians of approximately 5.00. In contrast, the scores of nurses’ perceptions of their public image, actual roles and environmental supplies tended to be more scattered with the medians of approximately 4.00. Especially, the scores of actual nursing roles spread from 1.50 to 6.00, resulting in relatively a large standard deviation of 0.81, compared with the other variables. This illustrates that nurses tend to have a positive self-concept and high expectations of their roles and the environmental supplies, which are mutually shared with other nurses. However, their perceptions of their environment and occupation tend to differ by the context.
Figure 6.1. A comparison between nurses’ self-concept and their perception of the public image of nurses
Figure 6.2. A comparison between nurses’ role conception and their actual roles
Figure 6.3. A comparison between nurses’ work values and their perception of the environmental supplies
As to nurses’ collective self-esteem, its mean score indicates nurses’ tendency to evaluate themselves as worthy members of the nursing profession. As for nurses’ perception of their job performance, Table 6.12 shows nurses’ tendency to evaluate their job performance positively. Nurses particularly perceived that their performance met the organisational requirements ($M = 5.09$ in the organisational criteria). But, they were less likely to see that their performance met the professional standard ($M = 4.38$ for the professional competency).

The scores of nurses’ turnover intention were relatively low. The mean score of nurses’ turnover intention was 2.35, which indicated that, in general, nurses somewhat disagreed with leaving their current jobs and/or nursing profession per se. Yet, there appeared to be less agreement on their intention to remain in the jobs. This was indicated by the relatively larger standard deviation of this variable ($SD = 1.06$) compared with those of the others.

Table 6.12 also shows the results of the Pearson correlation. Most variables were correlated with one another. Nurses’ self-concept was correlated with their role conception and work values positively. Their self-concept also had positive relationships with the perceived public image, the actual nursing role and the environmental supplies. Yet, the latter two relationships were weaker than the relationship between nurses’ self-concept, their role conception and work values. The public image of nurses was positively correlated with nurses’ perceptions of their actual roles and the environmental supplies as hypothesised. The public image was also correlated with nurses’ work values. But, its relationship was weaker than the one between nurses’ self-concept and their work values. As to the collective self-esteem, Table 6.12 shows its positive relationships with variables concerned with nurses’ professional orientation (i.e., nurses’ self-concept, role conception and work values) and the actual environmental/occupational factors. These results suggest that nurses with higher collective self-esteem tend to have a more positive self-concept and higher expectations of their roles and environmental supplies than those with low collective self-esteem. Nurses with high collective self-esteem also tend to perceive their environment and occupation more positively than their low collective self-esteem counterparts.

All variables related to the nurses’ professional orientation and their perceptions of the environment and the occupation were positively correlated with
nurses’ perception of their job performance. Nurses’ collective self-esteem was also positively correlated with their job performance. These results suggest that nurses with a positive self-concept and those with high collective self-esteem, role conception and work values are predisposed to evaluate their job performance positively. In the same way, nurses who perceive their public image, their actual roles and the environmental supplies positively also tend to rate their job performance positively.

In contrast to the relationship with nurses’ job performance, nurses’ turnover intention was negatively related to all the variables. The higher and the more positive nurses’ self-concept, role conception, work values or collective self-esteem was, the less likely nurses intended to quit their jobs. Moreover, the more positively nurses perceived their public image, the actual roles and the environmental supplies, the more likely they were to stay in the jobs. Finally, the results suggest that nurses who evaluate their job performance positively are less likely to quit their jobs.

Summary

This chapter presented the results of the preliminary analysis. The results show that participants came from diverse professional backgrounds, and in some areas, their demographic characteristics are significantly different from the national data. The response rate in this quantitative study was low. Yet, the sample size exceeded the minimum sample size ($N = 300$) targeted to this study, thus assuring an adequate statistical power to conduct the hypothesis testing. Factor analysis in conjunction with the content validity exercise helped to establish construct and content validity. Reasonable reliabilities of the instruments were obtained except for the Collective Self-esteem Scale.
CHAPTER 7: THE RESULTS OF HYPOTHESIS TESTING

Introduction

This chapter presents the results of the quantitative analysis, which tested the hypothesised relationships between the public image of nurses as perceived by nurses and their self-image. Results are also presented of the relationships between nurses’ perceptions of ideal and actual nursing practice. The third set of results presents a relationship between nurses’ perceptions of the PEO fit, job performance and turnover intention. This quantitative part of the study was also designed to identify how the individual characteristics of the nurse influence their perceptions/interpretations of the PEO fit.

Hypothesis Testing

Prior to testing each hypothesis, the assumptions of each statistical analysis (e.g., the assumptions of regression analysis) were tested. As has been indicated, univariate and multivariate outliers were removed from the analysis. The rest of the assumptions were satisfied, unless otherwise indicated.

Hypothesis 1

Hypothesis 1: Positive relationships exist between the perceived public image of nurses, nurses’ perception of actual roles and environmental supplies.

The overall relationship between the perceived public image and actual roles was tested first. The results of hierarchical regression analysis are presented in Table 7.1. The results showed that when the scores of the perceived public image of nurses were added to the analysis as the second step, the total variance increased from 9% to 11%, $F(1, 316) = 8.04$, $p = .01$. The unstandardised coefficient of the public image of nurses ($B = 0.20$) indicated a positive relationship between nurses’ perceptions of their public image and how they actually conduct their roles. In other words, nurses who perceived their public image negatively tended to view that they had less opportunities to actualise their nursing roles. This result supported hypothesis 1, although the variance explained by this relationship was small.
Table 7.1
Regression analysis examining the relationship between the perceived public image of nurses and their actual roles.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1 B</th>
<th>Step 2 B</th>
<th>Cumulative $R^2$ (Adjusted $R^2$)</th>
<th>$R^2$ Change</th>
<th>$F$ Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.57**</td>
<td>2.70**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>0.18*</td>
<td>0.18*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni. education</td>
<td>0.05</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>-0.30**</td>
<td>-0.28**</td>
<td></td>
<td>.09**</td>
<td>4.90**</td>
</tr>
<tr>
<td>Clinical position</td>
<td>0.39**</td>
<td>0.36*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace location</td>
<td>0.06</td>
<td>0.07</td>
<td>.09**</td>
<td>.09**</td>
<td>4.90**</td>
</tr>
<tr>
<td>Public image of nurses</td>
<td>0.20**</td>
<td>.11**</td>
<td>.02**</td>
<td></td>
<td>8.04**</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of their actual role. 2. $N = 324$. 3. $p < .05$. 4. $p < .01$. 4. $B$ indicates Unstandardised coefficients.

Table 7.2
Summary results of the factor-level analysis examining the relationship between the perceived public image of nurses and their actual roles.

<table>
<thead>
<tr>
<th>Variables &amp; Factors</th>
<th>Actual nursing roles</th>
<th>The use of nursing skills</th>
<th>Task delegation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cum.$R^2$ $R^2$ change</td>
<td>Cum.$R^2$ $R^2$ change</td>
<td></td>
</tr>
<tr>
<td>Public image</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>.65**</td>
<td>.65**</td>
<td>.56**</td>
</tr>
<tr>
<td>Public image:</td>
<td>.85**</td>
<td>.20*</td>
<td>.56*</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>(0.16*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>.65**</td>
<td>.65**</td>
<td>.06**</td>
</tr>
<tr>
<td>Public image:</td>
<td>.74*</td>
<td>.10</td>
<td>.06*</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>(0.14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. * indicates $p < .05$ and * indicates $p < .01$ after controlling type I error using the sequential Bonferroni procedure. 2. $N = 322 – 326$. 3. # Only unstandardised coefficients of the public images are indicated.

The summary results of the factor-level analysis are presented in Table 7.2. The cumulative $R^2$ in the column of the public image indicates the total variance explained by demographic variables and the public image of nurses. The change $R^2$ in the next column indicates the added variance explained by the public image of nurses after controlling for the demographic variables. Unstandardised coefficients of the public image of nurses are indicated below the change $R^2$. 
In this analysis, the residual histograms in the relationships between the leadership aptitude and task delegation and between the caring aptitude and the task delegation showed a flat distribution of residuals (i.e., the residuals are not normally distributed). However, there were neither indications of curvilinear relationship nor heteroscedasticity in the distributions of the residuals. Therefore, no data transformation was made.

As shown in Table 7.2, the relationship found to be statistically significant was the one between nurses’ perception of the public image of nurses as being leaders and their perception of their actual role in terms of the use of nursing skills. The coefficient of the perceived public image in this relationship was .16, indicating a positive relationship between them. The results showed that nurses who perceived the public viewing them as leaders, tended to see themselves using many of their professional skills including decision-making skills, patient education and providing emotional support than those who perceived a negative public image. However, the results also suggested that there were no relationships between nurses’ perceptions of their public image as leaders and their actual task delegation practice, between the public image of nurses as being caring and their use of their skills, and between the public image of nurses as being caring and their actual task delegation practice.

The overall relationship between nurses’ perceptions of their public image and the environmental supplies was tested next. The results are presented in Table 7.3. Results showed a significant increase in $R^2$ after the scores of the perceived public image were included in the analysis. The perceived public image of nurses added 10% of the explained variance, which made the total variance 11.8%. The relationship between the public image and the environmental supplies showed a positive association as indicated by the unstandardised coefficient of 0.33 ($p < .01$). These results suggest that nurses who perceive their public image negatively tend to see that they receive less environmental supplies from their work environment. This supports hypothesis 1.
Table 7.3
Regression analysis examining the relationship between the perceived public image of nurses and the environmental supplies.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1 B</th>
<th>Step 2 B</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>$F$ Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.43**</td>
<td>2.95**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.01</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>0.04</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni. education</td>
<td>0.04</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>-0.14</td>
<td>-0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical position</td>
<td>0.19</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace location</td>
<td>-0.10</td>
<td>-0.08</td>
<td>0.02</td>
<td>0.02</td>
<td>$F(6, 314) = (0.01)$ 1.21</td>
</tr>
<tr>
<td>Public image of nurses</td>
<td>0.33**</td>
<td>.12**</td>
<td>0.10**</td>
<td>$F(1, 313) = (0.10)$ 33.92**</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of the environmental supplies. 2. $N = 321$. 3. $p < .05$. 4. $p < .01$. 4. $B$ indicates unstandardised coefficients.

The factor-level analysis of the relationships between the perceived public image and nurses’ perception of the environmental supplies is shown in Table 7.4.

Table 7.4
Summary results of the factor-level analysis examining the relationship between the perceived public image of nurses and the environmental supplies.

<table>
<thead>
<tr>
<th>Variables &amp; Factors</th>
<th>Professional rewards</th>
<th>Environmental supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$ change</td>
<td>Cum.$R^2$</td>
</tr>
<tr>
<td>Public image</td>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Public image: Leadership aptitude</td>
<td>(0.31**)</td>
</tr>
<tr>
<td></td>
<td>.10**</td>
<td>.08**</td>
</tr>
<tr>
<td></td>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.06*</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Public image: Caring aptitude</td>
<td>(0.24**)</td>
</tr>
<tr>
<td></td>
<td>.06*</td>
<td>.04**</td>
</tr>
<tr>
<td></td>
<td>Caring aptitude</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. * indicates $p < .05$ and ** indicates $p < .01$ after controlling type I error using the sequential Bonferroni procedure. 2. $N = 312 – 326$. 3. Only unstandardised coefficients of the public images are indicated.

The results showed statistically significant positive relationships between all the aspects of the perceived public image and the environmental supplies. They indicate that nurses who perceive the public see them as leaders, professional,
independent and intelligent are more likely to perceive they have greater professional
rewards including professional respect, career advancement opportunities and
autonomy than those who perceive a negative public image of themselves. The former
nurses were also more likely to perceive greater professional challenges including
utilisation of their skills and knowledge than their counterparts. In addition, nurses
who perceived the public viewed them as leaders were more likely to perceive they
receive greater organisational supports such as endorsement of job security and clear
protocol to follow at their work than those perceiving the negative public image.
Similarly, the results showed that nurses who perceived that the public saw them as
being nurturing, warm and respectful tended to see themselves as being more
professionally rewarded, challenged and supported by their organisations than those
perceiving a negative public image of themselves. Moreover, results showed that
nurses’ perception of their public image was more strongly related to their perception
of the environmental supplies than that of their actual roles. In fact, all unstandardised
coefficients of the perceived public image of nurses were larger in the relationships
with the environmental supplies than those with the actual nursing roles.

**Hypothesis 2**

Hypothesis 2: Nurses’ self-concept is more positive than the image they
believe the public has of them.

The results of a dependent-samples (paired-samples) t-test showed that overall
nurses’ self-concept ($M = 4.96$, the score ranging from $1 = \text{negative self-concept}$ to $6 = \text{positive self-concept}$) was higher than their perception of the overall public image
of them ($M = 4.48$), and this difference was statistically significant, $t(343) = 13.22$, $p < .01$. Factor-level analysis showed that nurses perceived their leadership aptitude to
be ($M = 4.88$) significantly higher than their perception of the public image of their
leadership aptitude ($M = 4.17$), $t(343) = 16.46$, $p < .01$ after controlling for type I
error. However, nurses rated the public image of them as caring ($M = 5.22$) slightly
more positively than how they saw themselves ($M = 5.16$), and there was no
difference between these images, $t(343) = –1.29$, $p = .20$. These results partially
supported hypothesis 2.
Hypothesis 3

Hypothesis 3: Positive relationships exist between nurses’ self-concept, their role conception and work values.

Results of the relationship between the overall nurses’ self-concept and their role conception are presented in Table 7.5. The results of hierarchical regression analysis showed that nurses’ self-concept alone accounted for the total variance of 14% \( (p < .01) \) with their role conception. The coefficient on nurses’ self-concept \( (B = 0.44) \) indicated that nurses with a positive self-concept were predisposed to have higher role conception. This supported part of hypothesis 3 that states that there would be a positive relationship between nurses’ self-concept and role conception.

Table 7.5
Regression analysis examining the relationship between nurses’ self-concept and their role conception.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1 ( B )</th>
<th>Step 2 ( B )</th>
<th>Cumulative ( R^2 ) (Adjusted ( R^2 ))</th>
<th>( R^2 ) Change</th>
<th>( F ) Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.63**</td>
<td>2.41**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.01**</td>
<td>0.01**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>0.10</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni. education</td>
<td>0.01</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>0.12</td>
<td>0.12*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical position</td>
<td>0.05</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace location</td>
<td>-0.07</td>
<td>-0.06</td>
<td>(.05^*)</td>
<td>(.05^*)</td>
<td>(2.74^*)</td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>0.44**</td>
<td>.19**</td>
<td>(.14**)</td>
<td>(56.13**)</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ role conception. 2. \( N = 323 \). 3. \( p < .05^* \). \( p < .01^{**} \). 4. \( B \) indicates Unstandardised coefficients.

Factor-level analysis of the relationship between nurses’ self-concept and their role conception is presented in Table 7.6. While the demographic variables were not related to nurses’ role conception, the coefficients on nurses’ self-concept showed that nurses’ self-images as having aptitudes for leadership and caring were significant predictors of their expectation of their professional roles. The results suggested that nurses who viewed themselves as being leaders, autonomous and intellectual tended to seek more opportunities to utilise their skills such as making decisions and planning patient care. These nurses were also more predisposed to seek opportunities...
to delegate basic tasks to their subordinates. Results also illustrated that nurses who perceived themselves as being caring were more inclined to provide emotional support and patient education to their clients. However, these nurses also tended to seek more opportunities for delegating care that supports patient daily activities and hygiene measures. Compared to the effect of leadership aptitude, however, the effect of nurses’ caring aptitude on their desires for the use of skills and task delegation were smaller.

Table 7.6
Summary results of the factor-level analysis examining the relationship between nurses’ self-concept and their role conception.

<table>
<thead>
<tr>
<th>Variables &amp; Factors</th>
<th>Role conception</th>
<th>The use of nursing skills</th>
<th>Task delegation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cum. $R^2$</td>
<td>$R^2$ change ($B^2$)</td>
<td>Cum. $R^2$</td>
</tr>
<tr>
<td>Demographics</td>
<td>.05</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Nurses’ self-concept:</td>
<td>.13**</td>
<td>.09**</td>
<td>.08**</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>(0.34**)</td>
<td></td>
<td>(0.61**)</td>
</tr>
<tr>
<td>Demographics</td>
<td>.05</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Nurses’ self-concept:</td>
<td>.10**</td>
<td>.05**</td>
<td>.04</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>(0.20**)</td>
<td></td>
<td>(0.21*)</td>
</tr>
</tbody>
</table>

Note. 1. * indicates $p < .05$ and ** indicates $p < .01$ after controlling type I error using the sequential Bonferroni procedure. 2. $N = 317 – 323$. 3. # Only unstandardised coefficients of nurses’ self-concept are indicated.

As to the relationship between nurses’ self-concept and their work values, similar results as presented in Table 7.6 were obtained. As shown in Table 7.7, nurses’ self-concept was found to be significantly related to their work values. In fact, nurses’ self-concept alone accounted for 18% of the variance with work values. This suggests that nurses’ desires to fulfil their professional needs, such as receiving professional respect, career advancement opportunities, professional challenges and organisational support become higher, if nurses have a positive professional self-concept.
Table 7.7
Regression analysis examining the relationship between nurses’ self-concept and their work values.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1 B</th>
<th>Step 2 B</th>
<th>Cumulative $R^2$ (Adjusted $R^2$)</th>
<th>$R^2$ Change</th>
<th>$F$ Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.70</td>
<td>2.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>0.07</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni. education</td>
<td>-0.04</td>
<td>-0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>0.05</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical position</td>
<td>0.04</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace location</td>
<td>0.07</td>
<td>0.07</td>
<td>.02</td>
<td>.02</td>
<td>$F(6, 304) = (0.18)$</td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>0.51**</td>
<td>.20**</td>
<td>.18**</td>
<td>$F(1, 313) = (0.18)$</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ work values. 2. $N = 311$. 3. $p < .05*$. $p < .01**$. 4. B indicates unstandardised coefficients.

Table 7.8
Summary results of the factor-level analysis examining the relationship between nurses’ self-concept and their work values.

<table>
<thead>
<tr>
<th>Variables &amp; Factors</th>
<th>Professional rewards</th>
<th>Work values</th>
<th>Organisational supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ self-concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Self-concept:</td>
<td>.17**</td>
<td>.15**</td>
<td>.11**</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>(0.50**)</td>
<td>(0.39**)</td>
<td>(0.31*)</td>
</tr>
<tr>
<td>Demographics</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Self-concept:</td>
<td>.13**</td>
<td>.11**</td>
<td>.14**</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>(0.31**)</td>
<td>(0.34**)</td>
<td>(0.30**)</td>
</tr>
</tbody>
</table>

Note. 1. * indicates $p < .05$ and ** indicates $p < .01$ after controlling type I error using the sequential Bonferroni procedure. 2. $N = 310 – 327$. Only unstandardised coefficients of nurses’ self-concept are indicated.

The results of the factor-level analysis is summarised in Table 7.8. Once again, all the aspects of nurses’ self-concept were positively related to those of their work values (all $p < .05$ after controlling type I error). The table also indicates that nurses’ leadership aptitude shows a slightly stronger relationship with their work values than their caring aptitude does. These results suggested that nurses who saw themselves as
leaders and being caring had a tendency to have higher expectations of their environment (i.e., how their environment should reward them as professionals). In particular, nurses with a higher leadership aptitude tended to have a stronger tendency to do so.

The results of hypotheses 1 and 3 showed that nurses’ perceptions of their public image were positively related to their perceptions of their actual roles and the environmental supplies, while nurses’ self-concept was positively related to their role conception and work values. In addition, the results of hypothesis 2 showed that how nurses saw themselves was different to how they perceived the public viewed them, suggesting an image misfit. These results imply that the difference between nurses’ self-concept and their perception of their public image could contribute to the differences between their role conception and actual roles and between their work values and their perception of the environmental supplies. In fact, the misfit was evident not only in the image of nursing, but also in the ideal-actual nursing roles and the value-supply relationships. Nurses rated their role conception significantly higher than their perception of the actual roles ($t[345] = 22.82, p < .01^{10}$ for the utilisation of nursing skills, and $t[345] = 8.52, p < .01^{10}$ for task delegation). Nurses also rated their work values significantly higher than the environmental supplies they perceived to receive ($t[343] = 18.06, p < .01^{10}$ for professional rewards, $t[343] = 9.52, p < .01^{10}$ for professional challenges, and $t[343] = 7.64, p < .01^{10}$ for organisational support). These results supported the hypothesised relationships shown in Figure 4.1.

**Hypothesis 4**

Hypothesis 4: The higher nurses’ collective self-esteem is, the greater their perception of the PEO fit in their image, roles and values.

To test this hypothesis, higher ($n = 101$) and lower collective self-esteem ($n = 101$) groups were created by grouping nurses, whose collective self-esteem scores fell in either the upper and lower 30% of responses. The means collective self-esteem scores of the higher and lower groups were 5.93 and 4.37 respectively, and the difference between them was statistically significant, $t(119.49) = –33.86, p < .01$. The reliability of the Collective Self-esteem Scale improved from .52 to .63 after reforming these groups. Then, an independent t-test was conducted to see if there

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$^{10}$ The significance level was corrected using the sequential Bonferroni procedure.
were differences in their professional orientation (i.e., their self-concept, role conception and work values) and their perceptions of the actual environment and occupation (i.e., the public image of nurses, the actual nursing roles and the environmental supplies) between these groups. The results are presented in Table 7.9.

Table 7.9
Independent t-test based on the higher/lower collective self-esteem groups.

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Nurses’ self-concept</th>
<th>Public image</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower CSE</td>
<td>Higher CSE</td>
</tr>
<tr>
<td>Overall</td>
<td>4.66</td>
<td>5.27</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>4.58</td>
<td>5.19</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>4.87</td>
<td>5.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Role conception</th>
<th>Actual roles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower CSE</td>
<td>Higher CSE</td>
</tr>
<tr>
<td>Overall</td>
<td>4.79</td>
<td>5.25</td>
</tr>
<tr>
<td>The use of skills</td>
<td>4.91</td>
<td>5.34</td>
</tr>
<tr>
<td>Task delegation</td>
<td>4.33</td>
<td>4.86</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Work values</th>
<th>Environmental supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower CSE</td>
<td>Higher CSE</td>
</tr>
<tr>
<td>Overall</td>
<td>4.63</td>
<td>4.72</td>
</tr>
<tr>
<td>Professional rewards</td>
<td>4.55</td>
<td>5.12</td>
</tr>
<tr>
<td>Professional challenges</td>
<td>4.90</td>
<td>5.41</td>
</tr>
<tr>
<td>Organisational support</td>
<td>4.61</td>
<td>5.01</td>
</tr>
</tbody>
</table>

Note. As to the t-values at the factor-level, significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$.

As shown in the table, nurses who saw themselves as worthy members of their profession (a higher collective self-esteem group) rated all the variables more positively than those with lower collective self-esteem. While nurses’ perception of their actual task delegation practice did not differ significantly between the higher and lower collective self-esteem groups, they had very different views on the rest of the variables. These results suggested that nurses with higher collective self-esteem tended to have a more positive self-image, higher role expectations (role conception) and higher work values than those with lower collective self-esteem. The results also indicated that nurses with higher collective self-esteem tended to perceive their public
image, their actual roles and the environmental supplies more positively than nurses with lower collective self-esteem.

The detail results of the group difference in the perception of the fit between nurses’ self-concept and their perception of the public image are presented in Table 7.10.

Table 7.10
The group difference in the perception of the overall image fit.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Unstandardised coefficients ($B$)</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change from step 1 to step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>4.38**</td>
<td>4.32**</td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>-0.01</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>Uni. education</td>
<td>-0.08</td>
<td>-0.06</td>
<td></td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>-0.06</td>
<td>-0.07</td>
<td></td>
</tr>
<tr>
<td>Clinical position</td>
<td>-0.16</td>
<td>-0.15</td>
<td></td>
</tr>
<tr>
<td>Workplace location</td>
<td>0.02</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>0.50**</td>
<td>0.56**</td>
<td></td>
</tr>
<tr>
<td>Group code (G)</td>
<td>0.13</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Work status X G</td>
<td>-0.01</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>Uni education X G</td>
<td>-0.12</td>
<td>-0.14</td>
<td></td>
</tr>
<tr>
<td>Clinical specialty X G</td>
<td>-0.01</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Clinical position X G</td>
<td>-0.04</td>
<td>-0.07</td>
<td></td>
</tr>
<tr>
<td>Workplace location X G</td>
<td>0.03</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

\[ R^2 = .02^* \]
\[ F(1, 174) = 5.08 \]
\[ p = .03 \]

Note. 1. The dependent variable is nurses’ perception of their public image. 2. $n = 188$. 3. * $p < .05$, ** $p < .01$. 4. The scores of the nurses’ self-concept were scale-centred by subtracting their mean to reduce multicollinearity.

Table 7.10 shows that the coefficient of the interaction term between nurses’ self-concept and group membership was positive and significant. The coefficient of this interaction term indicated that the slopes of lines explained by the relationship between nurses’ self-concept and their public image (i.e., the image-fit index) were different between the groups. In other words, nurses with higher collective self-esteem tended to experience a significantly better fit between their self-image and the public
image than those with lower collective self-esteem. This relationship is illustrated in Figure 7.1.

![Figure 7.1](image)

*Figure 7.1.* The relationship between nurses’ overall self-concept and their perceived public image between the higher and lower collective self-esteem groups.

As shown in Table 7.9, nurses with higher collective self-esteem rated their overall self-concept very high. Hence, nurses with high collective self-esteem tended to enjoy a better fit, and this fit was characterised by their tendency to perceive both themselves and their public image more positively than those with lower collective self-esteem. These results supported hypothesis 4 in terms of the image fit.

The results of the factor-level analysis are summarised in Table 7.11. The results of the analysis in the leadership aptitude showed that the coefficient of the interaction term between nurses’ self-concept and the group code was significant and positive ($B = 0.30$). This indicated that nurses with higher collective self-esteem enjoyed a much better fit in their leadership image than those with lower collective self-esteem. The group difference in the relationships between nurses’ self-concept and their perceived public image in leadership aptitudes is illustrated in Figure 7.2.
Table 7.11
Summary results of the factor-level analysis of the group difference in the perception of the image fit.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Self-concept x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership aptitudes</td>
<td>.26**</td>
<td>.29**</td>
<td>.30*</td>
</tr>
<tr>
<td>Caring aptitudes</td>
<td>.21**</td>
<td>.21**</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of their public image. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 188$.

Figure 7.2. The relationship between nurses’ self-concept and their perceived public image in leadership aptitudes between the higher and lower collective self-esteem groups

As illustrated in Figure 7.2, the slope representing the higher collective self-esteem group is much steeper than that of the lower collective self-esteem group. This indicates that nurses with higher collective self-esteem had a stronger predisposition to perceive their public image in accordance with their own self-view of leadership aptitudes than those with lower collective self-esteem. As presented in Table 7.9, nurses with higher collective self-esteem rated their self-concept in leadership
aptitudes high. Therefore, the results suggest that the better fit experienced by nurses with higher collective self-esteem was a result of those nurses perceiving themselves and their public image of leadership aptitudes very positively compared with those with lower collective self-esteem. These results supported hypothesis 4.

With reference to caring aptitudes, Table 7.11 shows that the coefficient of the interaction term between nurses’ self-concept and their perceived public image is slightly negative ($B = -0.01$), but not significant. This suggests that the degrees of the caring image fit perceived by the higher and lower collective self-esteem groups were almost identical. The results of the t-test (see Table 7.9) and the illustration of the slopes representing the caring image fit by the group provided additional information (Note. the plot is not presented here, as there was no significant moderating effect of collective self-esteem on the caring image fit). They indicated that a fit experienced by nurses with lower collective self-esteem was a result of those nurses perceiving both their self-image and the public image more negatively than those with higher collective self-esteem.

While significant differences existed in the perceptions of the image fit between the higher and lower collective self-esteem groups, no significant difference in the perception of the fit between nurses’ role conception and their actual roles was found between these groups. The summary results of overall role fit and its factor-level analysis are presented in Table 7.12. These results rejected hypothesis 4. However, the results of the t-test (see Table 7.9) and the slopes representing the role fit between the groups (Note. not presented) suggest that nurses with a different level of collective self-esteem perceived the same degree of role fit, but with different levels of needs and practice. That is, a fit perceived by nurses with higher collective self-esteem was characterised by those nurses embracing higher role conception and perceiving a greater degree of the actual role engagement than those with lower collective self-esteem.
Table 7.12
Summary results of the role fit by collective self-esteem.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Role conception x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ role conception</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>.19**</td>
<td>.19**</td>
<td>-0.05</td>
</tr>
<tr>
<td>Leadership aptitudes</td>
<td>.17**</td>
<td>.17**</td>
<td>-0.03</td>
</tr>
<tr>
<td>Caring aptitudes</td>
<td>.24**</td>
<td>.24**</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Note. ^1^ The dependent variable is nurses’ perception of their actual roles. ^2^ Only the coefficients of the variable entered in the second step are indicated. ^3^ Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. ^4^ n = 190 -191.

The same interpretation applied to nurses’ perception of the fit between their work values and their perception of the environmental supplies. The summary results are presented in Table 7.13. The table shows that nurses with higher collective self-esteem tended to perceive a slightly better fit between their work values and the environmental supplies than nurses with lower collective self-esteem. The coefficients on the interaction terms between the group code and nurses’ work values in professional rewards and challenges were small and insignificant. On the other hand, the coefficients on the interaction terms between the group code and nurses’ overall work values and between the group code and the work values in organisational support were approaching the significant level (The $p$-values for the both coefficients were .08). Overall, the results suggested that nurses’ perception of the value-supply fit did not differ significantly regardless of their levels of collective self-esteem, which rejected hypothesis 4. Considering the results of the t-test, it can be interpreted that nurses with higher and lower collective self-esteem have a similar perception of the fit. While the perception of the higher collective self-esteem group is characterised by their embracing high work values and perceiving reasonable environmental supplies, the fit in the lower collective self-esteem group is featured by their holding lower work values and receiving lower environmental supplies relative to their counterparts.
Table 7.13
Summary results of the value-supply fit by collective self-esteem.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Work values x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ work values</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>.24**</td>
<td>.25**</td>
<td>0.15</td>
</tr>
<tr>
<td>Professional rewards</td>
<td>.23**</td>
<td>.23**</td>
<td>0.07</td>
</tr>
<tr>
<td>Professional challenges</td>
<td>.26**</td>
<td>.27**</td>
<td>0.06</td>
</tr>
<tr>
<td>Organisational support</td>
<td>.20**</td>
<td>.22**</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of the environmental supplies. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 187 -190$.

Hypothesis 5 and 6

Hypothesis 5: There are no relationships between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with less clinical experience.

Hypothesis 6: Positive relationships exist between nurses’ self-concept and their perception of the public image of nurses, between nurses’ role conception and their perception of actual role, and between nurses’ work values and their perception of the environmental supplies, among nurses with a longer clinical experience.

The results of a t-test are summarised in Table 7.14. As for the images of nurses, nurses with longer clinical experience tended to rate their overall self-concept ($M = 5.01$) and their perception of the public image ($M = 4.52$) more positively than those with less experience ($M = 4.92$ and 4.46 respectively). Experienced nurses also saw themselves and considered that the public saw them as being more a leader than those with less experience. In addition, experienced nurses viewed themselves as being more caring than their less experienced counterpart. There were no statistically significant differences in the perceptions of experienced and less experienced nurses’ overall images and self-image as leaders. In contrast, the results showed that nurses with less experience tended to believe the public viewed them as being more caring.
than those with more experience ($M = 5.04$). Overall, the results of the t-test contradicted hypotheses 5 and 6.

Table 7.14
Independent t-test based on the length of clinical experience.

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Nurses’ self-concept</th>
<th>Public image</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\leq$ 4 yr exp.</td>
<td>$\geq$ 13 yrs.</td>
</tr>
<tr>
<td>Overall</td>
<td>4.92</td>
<td>5.01</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>4.81</td>
<td>4.94</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>5.12</td>
<td>5.18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Role conception</th>
<th>Actual roles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\leq$ 4 yrs.</td>
<td>$\geq$ 13 yrs.</td>
</tr>
<tr>
<td>Overall</td>
<td>4.86</td>
<td>5.14</td>
</tr>
<tr>
<td>The use of skills</td>
<td>4.99</td>
<td>5.24</td>
</tr>
<tr>
<td>Task delegation</td>
<td>4.32</td>
<td>4.73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Work values</th>
<th>Environmental supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\leq$ 4 yrs.</td>
<td>$\geq$ 13 yrs.</td>
</tr>
<tr>
<td>Overall</td>
<td>4.84</td>
<td>4.87</td>
</tr>
<tr>
<td>Professional rewards</td>
<td>4.80</td>
<td>4.80</td>
</tr>
<tr>
<td>Professional challenges</td>
<td>5.16</td>
<td>5.17</td>
</tr>
<tr>
<td>Organisational support</td>
<td>4.69</td>
<td>4.80</td>
</tr>
</tbody>
</table>

*Note.* As to the t-values at the factor-level, significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$.

Similar results were observed in nurses’ role conception and their perception of their actual roles. Nurses with more experience rated all the aspects of their role conception and their perception of their actual roles more positively than those with less experience. Except for nurses’ perception of the actual opportunities they had for the utilisation of their nursing skills, these differences were statistically significant.

Nurses with more experience also rated their work values and the environmental supplies they receive from the organisation more positively than those with less experience. However, these differences were very small and there were no significant differences between the responses from the experienced and less experienced nurses.
To test if nurses with a different length of clinical experience perceive a different level of PEO fit, regression analysis was run separately on the more and less experienced groups (see the results of the first analysis in Table 7.15). Table 7.15 shows that there is a significant relationship between self-concept of more experienced nurses and their perception of the public image of nurses. This supported hypothesis 6. However, hypothesis 5 was rejected, as there was also a significant relationship between the self-concept of less experienced nurses and their perception of the public image.

Table 7.15
Summary results of the image fit by the experience.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>First analysis</th>
<th>Second analysis</th>
<th>Group difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 4 yrs.</td>
<td>≥ 13 yrs.</td>
<td>Group difference</td>
</tr>
<tr>
<td></td>
<td>Cum $R^2$</td>
<td>$R^2$ change $(B)$</td>
<td>Cum $R^2$</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.04</td>
<td>.04</td>
<td>.05</td>
</tr>
<tr>
<td>Step 2</td>
<td>.24**</td>
<td>.20**</td>
<td>.14*</td>
</tr>
<tr>
<td></td>
<td>(0.34***#1)</td>
<td></td>
<td>(0.24***#1)</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.05</td>
<td>.05</td>
<td>.09</td>
</tr>
<tr>
<td>Step 2</td>
<td>.21**</td>
<td>.16**</td>
<td>.18**</td>
</tr>
<tr>
<td></td>
<td>(0.28***#1)</td>
<td></td>
<td>(0.22***#1)</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Step 1</td>
<td>.05</td>
<td>.05</td>
<td>.06</td>
</tr>
<tr>
<td>Step 2</td>
<td>.21**</td>
<td>.16**</td>
<td>.12</td>
</tr>
<tr>
<td></td>
<td>(0.49***#1)</td>
<td></td>
<td>(0.23***#1)</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ self-concept. 2. Only the coefficients of the variable entered in the second step are indicated. #1 indicates the coefficient of the public image. #2 indicates the coefficient of the public image X group code by the length of experience. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 99 – 102$ for each group, and $n = 202 – 204$ for combined data.

An additional analysis was conducted to investigate if the perception of the image fit was different between these groups. Moderated regression analysis was used to examine group differences (see the results of the second analysis in Table 7.15). A group code of −1 was assigned to nurses with 4 and less years of experience, and a group code of +1 was assigned to nurses with 13 and more years of experience. The results indicate that there are no significant differences in their perceptions of the
image fits between these two groups. To sum up, the results of the t-test (see Table 7.14) and the moderated regression analysis suggest that nurses with less experience tended to perceive a slightly better fit in terms of their overall image and their image as leaders than their counterparts. This fit was characterised by the less experienced nurses perceiving themselves and their public image more negatively than those with more experience. The results also suggested that less experienced nurses perceived a marginally better fit in their caring image than their counterparts, and this fit was characterised by less experienced nurses perceiving their public image significantly more positively than those with more experience. These findings did not support hypotheses 5 and 6.

The summary results of nurses’ perception of fit between their role conception and their perception of the actual roles are presented in Table 7.16. As opposed to the results of the image fit between the experienced and less experienced nurses, Table 7.16 shows that nurses with longer clinical experience tended to experience a slightly better fit in their roles. Experienced nurses tended to see their overall actual nursing roles as being more congruent with their expectations toward their roles ($B = 0.27$) than less experienced nurses did ($B = 0.23$). Experienced nurses also saw their desires to use their skills and to delegate basic nursing care to other health care personnel to be more fulfilled in their actual practice than those with less experience. The group comparison in their perception of the role fit was made in the second analysis using moderated regression analysis, as significant relationships between their role conception and actual roles were found in both groups (see the results of the second analysis in Table 7.16). The results suggested that there were no statistically significant differences in perceptions of the role fit between experienced and less experienced nurses. The above findings appear to support the hypotheses that perception of a poorer fit would exist among less experienced nurses than those with more experience. However, considering the results of the t-test in Table 7.14 and the slopes representing the role fit by the group (Note. not presented here), the results actually suggested that nurses with longer clinical experience perceived a slightly better quality of fit, characterised by more opportunities in the use of their nursing skills and task delegation, which were more congruent with their needs. On the other hand, the role expectations of less experienced nurses tended to be lower than their counterparts, yet they viewed their actual roles as not even meeting their needs,
resulting in experience of a poorer fit compared with those with longer clinical experience. These findings rejected hypotheses 5 and 6.

Table 7.16
Summary results of the role fit by the experience.

<table>
<thead>
<tr>
<th>Predictors Actual roles</th>
<th>First analysis</th>
<th>Second analysis</th>
<th>Group difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 4 yrs.</td>
<td>≥ 13 yrs.</td>
<td>Group difference</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.01</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>Step 2</td>
<td>.10</td>
<td>.09**</td>
<td>.21**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.23**#1)</td>
<td>(0.27**#1)</td>
</tr>
<tr>
<td></td>
<td>.20**</td>
<td>.20**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.06</td>
<td>.06</td>
<td>.20**</td>
</tr>
<tr>
<td></td>
<td>.10</td>
<td>.09**</td>
<td>.21**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.23**#1)</td>
<td>(0.27**#1)</td>
</tr>
<tr>
<td></td>
<td>.20**</td>
<td>.20**</td>
<td></td>
</tr>
<tr>
<td>The use of skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.01</td>
<td>.01</td>
<td>.05</td>
</tr>
<tr>
<td>Step 2</td>
<td>.07</td>
<td>.06*</td>
<td>.20**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.18**#1)</td>
<td>(0.25**#1)</td>
</tr>
<tr>
<td></td>
<td>.17**</td>
<td>.17**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.10</td>
<td>.14**</td>
<td>.29**</td>
</tr>
<tr>
<td></td>
<td>.24**</td>
<td>.24**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.09</td>
<td>.09</td>
<td>.24**</td>
</tr>
<tr>
<td></td>
<td>.15</td>
<td>.14**</td>
<td>.29**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.29**#1)</td>
<td>(0.34**#1)</td>
</tr>
<tr>
<td></td>
<td>.24**</td>
<td>.24**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ role conception. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates p < .05 and ** indicates p < .01. 4. n = 102 – 106 for each group, and n = 207 – 211 for combined data.

As for the perception of the value-supply fit, the results suggested that nurses with more years of clinical experience tended to enjoy a slightly better fit between their overall work values and their perception of the overall environmental supplies than those less experienced. As shown in the first analysis in Table 7.17, the coefficients on nurses’ perception of the overall environmental supplies was 0.32 in the less experienced group and was marginally smaller than that of 0.34 in the more experience group. This may support the hypotheses that experienced nurses would enjoy a better fit. However, as indicated in the t-test, less experienced nurses perceived their work values and the environmental supplies slightly more negatively than those with more experience. This contradicted the assumptions behind these hypotheses that experienced nurses’ perception of a better fit may result from their
lowered work values. Moderated regression analysis was run to compare the degree of the overall value-supply fit between the more and less experienced nurses (see results of the second analysis in Table 7.17). There was no statistically significant difference in their perception of the overall value-supply fit. Overall, the results did not support hypotheses 5 and 6.

Table 7.17
Summary results of the value-supply fit by the experience.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>First analysis</th>
<th>Second analysis</th>
<th>Group difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 4 yrs.</td>
<td>≥ 13 yrs.</td>
<td></td>
</tr>
<tr>
<td>Environmental supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.10</td>
<td>.05</td>
<td>.21**</td>
</tr>
<tr>
<td>Step 2</td>
<td>.22**</td>
<td>.20**</td>
<td>.21**</td>
</tr>
<tr>
<td></td>
<td>(0.32**)</td>
<td>(0.34**)</td>
<td></td>
</tr>
<tr>
<td>Professional rewards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.04</td>
<td>.06</td>
<td>.14**</td>
</tr>
<tr>
<td>Step 2</td>
<td>.10</td>
<td>.19**</td>
<td>.14**</td>
</tr>
<tr>
<td></td>
<td>(0.23**)</td>
<td>(0.31**)</td>
<td></td>
</tr>
<tr>
<td>Professional challenges</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.03</td>
<td>.05</td>
<td>.33**</td>
</tr>
<tr>
<td>Step 2</td>
<td>.34**</td>
<td>.31**</td>
<td>.33**</td>
</tr>
<tr>
<td></td>
<td>(0.48**)</td>
<td>(0.43**)</td>
<td></td>
</tr>
<tr>
<td>Organisational support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.11</td>
<td>.05</td>
<td>.29**</td>
</tr>
<tr>
<td>Step 2</td>
<td>.31**</td>
<td>.26**</td>
<td>.29**</td>
</tr>
<tr>
<td></td>
<td>(0.45**)</td>
<td>(0.41**)</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ work values. 2. Only the coefficients of the variable entered in the second step are indicated. #1 indicates the coefficient of nurses’ work values. #2 indicates the coefficient of nurses’ work values X group code by the length of experience. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 100 – 104$ for each group, and $n = 204 – 206$ for combined data.

Nurses with more experience also experienced a better fit between their need for professional rewards and perception of the environmental supplies ($B = 0.31$) than those with less experience ($B = 0.23$). The results suggest that the experienced nurses tended to perceive a better fit between their needs and actual environmental supplies. Consistent with the previous results, however, there was no statistically significant difference in the perception of fit between the two groups.
In contrast, less experienced nurses perceived a better fit in terms of professional challenges and organisational support, as indicated by larger coefficients on the environmental variables, than those with more experience. These results were also reinforced by the negative coefficients on the interaction terms in the group comparison (see the coefficients on the interaction terms in the second step of the second analysis), although they were not significant. Regardless of which group of nurses perceived a better fit, the results of the t-test contradicted hypotheses 5 and 6, which postulated that the experienced nurses would report lower work values than less experienced nurses.

**Hypothesis 7**

Hypothesis 7: Nurses in different clinical areas will report different professional orientations and perceptions of their public image and their environment/occupation. Thus, nurses in different clinical areas will report different degrees of the PEO fit in their image, roles and work values.

A t-test was conducted to see if there were any differences in nurses’ professional orientation and their perceptions of the environment/occupation between medical/surgical and high dependency care nurses. The results are summarised in Table 7.18. The t-test showed that the medical/surgical nurses tended to perceive themselves and their public image slightly more positively than the high dependency nurses. But, there were no significant differences in their perceptions of both self and public image. The results also showed that high dependency nurses were predisposed to have higher desires and expectations of their roles than medical/surgical nurses, but these were not significantly different. In contrast, the high dependency nurses tended to perceive themselves fulfilling their overall roles less and having fewer opportunities for task delegation compared to their medical/surgical counterparts, and these differences were statistically significant. With reference to nurses’ work values and their perceptions of the environmental supplies, Table 7.18 suggests that the high dependency nurses, in general, had a slightly higher need to fulfil their professional values than their medical/surgical counterparts. However, they tended to perceive they have less rewards, challenges and support than medical/surgical nurses. There were no statistically significant differences in the work values and perceptions of the environmental supplies between these two groups.
Table 7.18
Independent t-test based on the clinical area.

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Nurses’ self-concept</th>
<th>Public image</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical/Surgical High dependency</td>
<td>t-value</td>
</tr>
<tr>
<td>Overall</td>
<td>4.99</td>
<td>4.91</td>
</tr>
<tr>
<td>Leadership aptitude</td>
<td>4.93</td>
<td>4.84</td>
</tr>
<tr>
<td>Caring aptitude</td>
<td>5.14</td>
<td>5.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Role conception</th>
<th>Actual roles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical/Surgical High dependency</td>
<td>t-value</td>
</tr>
<tr>
<td>Overall</td>
<td>4.99</td>
<td>5.06</td>
</tr>
<tr>
<td>The use of skills</td>
<td>5.12</td>
<td>5.17</td>
</tr>
<tr>
<td>Task delegation</td>
<td>4.47</td>
<td>4.63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables &amp; factors</th>
<th>Work values</th>
<th>Environmental supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical/Surgical High dependency</td>
<td>t-value</td>
</tr>
<tr>
<td>Overall</td>
<td>4.88</td>
<td>4.90</td>
</tr>
<tr>
<td>Professional rewards</td>
<td>4.81</td>
<td>4.86</td>
</tr>
<tr>
<td>Professional challenges</td>
<td>5.17</td>
<td>5.24</td>
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<tr>
<td>Organisational support</td>
<td>4.82</td>
<td>4.70</td>
</tr>
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</table>

Note. As to the t-values at the factor-level, significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$.

To examine the perception of the fit between the self-concept and perception of public image between medical/surgical and high dependency care nurses, moderated regression analysis was performed. The summary results are presented in Table 7.19. As shown in the table, nurses’ perception of the degree of the overall image fit was almost identical between the groups. This is indicated by the coefficient on the interaction term between nurses’ self-concept and the group code, which is close to 0. Considering that high dependency care nurses rated both their overall self-concept and the perceived public image slightly more negatively than medical/surgical nurses did, the results suggest that nurses with different clinical areas perceived the same degree of overall image fit, but with slightly different levels of perception in themselves and their public image.
Table 7.19

Summary results of the image fit by the clinical area.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Self-concept x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>.22**</td>
<td>.22**</td>
<td>.00</td>
</tr>
<tr>
<td>Leadership aptitudes</td>
<td>.18**#/3</td>
<td>.19**</td>
<td>.01</td>
</tr>
<tr>
<td>Caring aptitudes</td>
<td>.10*#/3</td>
<td>.10*</td>
<td>.00</td>
</tr>
</tbody>
</table>

**Note.** 1. The dependent variable is nurses’ perception of their public image. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 195 - 201$. 5. #3 The university education was removed from the demographic variables, as only nurses with university education were retained in the high dependency care after eliminating outlying cases.

As for the image fit with leadership aptitudes, the results showed that high dependency care nurses perceived a slightly better fit than their medical/surgical counterparts. This is indicated by the coefficient on the interaction term between nurses’ self-concept in leadership aptitudes and the group code, which is positive. On the other hand, the results showed that medical/surgical nurses perceived a slightly better image fit in their caring aptitudes than high dependency care nurses. However, the plots of the relationships between nurses’ self-concept and their public image by the group (**Note.** not shown here) and the results of the t-test (see Table 7.18) suggest that there was no difference in their perception of the image fit between medical/surgical care and high dependency care nurses. These results rejected hypothesis 7.

Table 7.20 summarises the results of the role fit perceived by nurses in different clinical areas. As shown in Table 7.20, both high dependency and medical/surgical care nurses perceived a similar degree of fit between their overall role conception and their actual roles. This result rejected hypothesis 7. The results of the t-test (see Table 7.18) showed that medical/surgical care nurses rated their role conception and their actual roles higher than their high dependency care counterparts. Therefore, the overall role fit perceived by medical/surgical care nurses was characterised by those nurses embracing higher role conception and perceiving themselves engaging in more of their roles than high dependency care nurses.
Table 7.20
Summary results of the role fit by the clinical area

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$ Step 1</th>
<th>$R^2$ Change</th>
<th>Role conception x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ role conception</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>.17**&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.00</td>
<td>0.01</td>
</tr>
<tr>
<td>The use of skills</td>
<td>.13**&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Task delegation</td>
<td>.20**&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.01</td>
<td>-0.01</td>
</tr>
</tbody>
</table>

*Note. 1. The dependent variable is nurses’ perception of their actual roles. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 193 - 197$. 5. The university education was removed from the demographic variables, as only nurses with university education were retained in the high dependency care after eliminating outlying cases.

As for the factor-level analysis of the perception of the role fit between the medical/surgical and high dependency care groups, the results showed that both groups perceived a similar degree of fit in the use of their skills and task delegation. The coefficients of the interaction terms between nurses’ role conception and the group code indicate that a slightly better fit in the use of skills was perceived by high dependency care nurses, while a slightly better fit in task delegation was perceived by medical/surgical care nurses. However, when the degree of perceived role fit was plotted separately by the group (*Note. not shown here*), it showed that medical/surgical care nurses consistently perceived themselves engaging in more of their roles than high dependency care nurses. These results are compatible with the results of the t-test (see Table 7.18).

The results of nurses’ perception of the value-supply fit by the group are presented in Table 7.21. The table shows that there existed a better fit between nurses’ work values and their perception of the environmental supplies in the medical/surgical group than in the high dependency care group. This is illustrated by the coefficients on the interaction terms between nurses’ work values and the group code, which are negative in the overall as well as factor-level analysis. Most coefficients on the interaction terms were small and insignificant, which rejected hypothesis 7. However,
the coefficients on the interaction terms between nurses’ work values for organisational support and the group code reached the significance level of .01.

Table 7.21
Summary results of the value-supply fit by the clinical area

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$ Step 1</th>
<th>$R^2$ Change</th>
<th>Work values x Group (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ work values</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>.21** $^{(3)}$</td>
<td>.21**</td>
<td>-0.06</td>
</tr>
<tr>
<td>Professional rewards</td>
<td>.11** $^{(3)}$</td>
<td>.11**</td>
<td>-0.05</td>
</tr>
<tr>
<td>Professional challenges</td>
<td>.27** $^{(3)}$</td>
<td>.27**</td>
<td>-0.02</td>
</tr>
<tr>
<td>Organisational rewards</td>
<td>.23** $^{(3)}$</td>
<td>.26**</td>
<td>-0.20**</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of the environmental supplies. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 191 - 200$. 5. The university education was removed from the demographic variables, as only nurses with university education were retained in the high dependency care after eliminating outlying cases.

Figure 7.3 (a) presents the group difference in the relationships between nurses’ values for organisational support and their perception of actual support. As shown in the figure, medical/surgical nurses perceived a better fit between their needs for organisational support and the actual support they received from the organisation. On the other hand, high dependency care nurses’ need for organisational support was less related to the amount of support they received from the organisation. Figure 7.3 (a) shows that high dependency care nurses tended to receive more organisational support than they desired.

The relationships illustrated in Figure 7.3 (a) appear to be incongruent with the results of the t-test (see Table 7.18), which showed that medical/surgical nurses perceived that they received more organisational support than high dependency care nurses. These inconsistent results emanated from the fact that two of the interaction terms between demographic variables and the group code had marginal effects on nurses’ perception of support they received from the organisation (i.e., the coefficient on clinical position X group code = 0.18, $p = .68$, and the coefficient on workplace location X group code = –0.13, $p = .83$). In fact, when the effects of all the
demographic variables were removed, the results of moderated regression analysis were more consistent with the results of the t-test, as shown in Figure 7.3 (b).

(a) The effects of the demographic variables held constant

(b) Demographic variables excluded

*Figure 7.3.* The relationship between nurses’ work values and their perception of the environmental supplies of organisational support between the high dependency care and medical/surgical care groups

To sum up, the results of hypothesis 7 suggest that both medical/surgical and high dependency care nurses perceived a similar degree of PEO fit, which did not support the hypothesis. However, the exception applies to the fit between nurses’
work values for organisational support and actual support they received from the organisation. The results showed that high dependency care nurses tended to receive more support compared with their needs, which results in the perception of a poorer fit perceived by high dependency care nurses than medical/surgical nurses.

Hypothesis 8

Hypothesis 8: Positive relationships exist between perceived fit in nurses’ image, roles and work values and their job performance.

Prior to the hypothesis testing, regression analysis was run to test the effect of the demographic variables on nurses’ perception of their job performance. This was done because the demographic variables were not held constant in this analysis in order to reduce type I error. However, investigating their effects may provide a more meaningful interpretation and application of the results. Six demographic variables entered in hypotheses 1, 3 and 4 were examined. The results showed that none of the demographic variables appeared as significant predictors except that work status was found in a significant relationship with nurses’ perception of their job performance based on the organisational criteria. The results showed that full-time nurses were more likely to see their criteria-based job performance more positively than part-time nurses.

Two types of analyses were conducted to test this hypothesis. These were polynomial regression analysis and graphical analysis including response surface analysis.

The Results of Polynomial Regression Analysis

In this analysis, the monotonic model was tested by entering monotonic terms (i.e., E and P) of the personal and environmental variable to regression analysis first. For the monotonic model to be supported, $R^2$ has to be significant, the coefficients on the personal and the environmental variable have to be significant and have opposite sign, imposing the monotonic constraints should not significantly reduce the $R^2$ (acceptance of the monotonic constraint), and entering the quadratic terms (i.e., E, P, E^2, EP and P^2) should not increase it (rejection of the quadratic terms). When the quadratic terms was found to significantly increase the variance, then, the optimal and asymptotic models were tested by imposing their constraints to see if it did not reduce the variance explained by the unconstrained model. Finally, the cubic terms (i.e., E^3,
E^2P, EP^2, and P^3) were added to the analysis to see if the model was truly quadratic, but not cubic in nature. The results of the unconstrained models of the image fit and nurses’ job performance are presented in Table 7.22.

Table 7.22
Unconstrained models based on the image fit and job performance.

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model (B)</th>
<th>Unconstrained quadratic model (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>Image &amp; Job performance</td>
<td>0.02</td>
<td>0.65**</td>
</tr>
<tr>
<td>Image F1 &amp; JP F1</td>
<td>0.04</td>
<td>0.59**</td>
</tr>
<tr>
<td>Image F2 &amp; JP F1</td>
<td>0.16**</td>
<td>0.29**</td>
</tr>
<tr>
<td>Image F1 &amp; JP F2</td>
<td>-0.07</td>
<td>0.73**</td>
</tr>
<tr>
<td>Image F2 &amp; JP F2</td>
<td>0.03</td>
<td>0.20*</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: Image- Image fit, Image F1- Image fit in leadership aptitude, Image F2- Image fit in caring aptitude, JP F1- Nurses’ evaluation of their job performance based on organisational performance criteria, and JP F2- Nurses’ evaluation of their job performance based on professional competency. 2. The abbreviations in the second row are as follows: E- Perceived public image and P- Nurses’ self-concept. 3. * p < .05, ** p < .01. The significance level of R^2 in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. N = 331 – 334. 5. Constant is omitted in this table. 6. The dependent variable is job performance.

With reference to the relationship between the overall image fit and job performance, the unconstrained monotonic model explained 24% of the job performance (p < .01). However, only the coefficient on nurses’ self-concept was significant and both coefficients had positive sign, which do not support the monotonic model. In fact, the monotonic constrain was rejected, F(1, 331) = 94.07, p < .01. However, adding the quadratic terms to the equation did not increase the variance, F(3, 328) = 2.09, p = .10. Thus, the relationship was linear and the analysis suggested that nurses’ self-concept was a significant predictor of their overall job performance evaluation.

At the factor-level analysis, each of the image-fit (i.e., the leadership and caring image-fit) was tested on two factors of job performance, which were the
organisational performance criteria and professional competency. As for the leadership image-fit and nurses’ evaluation of their job performance based on the organisational performance criteria, the unconstrained monotonic model explained 28% of their evaluation of job performance. The coefficients on both variables were positive and only that on nurses’ leadership aptitude was significant. The monotonic constraint was rejected, $F(1, 329) = 93.51, p < .01$, suggesting that the model did not conform to the monotonic model. The quadratic terms were also rejected, $F(3, 326) = 0.27, p > .05$. These results indicated that the relationship between the leadership image-fit and their organisational performance was linear, in which only the nurses’ leadership aptitude was contributing to explaining their evaluation of the criteria-based job performance.

A similar result was observed in the relationship between the leadership image-fit and nurses’ evaluation of their professional competency. The $R^2$ of the unconstrained monotonic model was significant. The coefficients on the perceived public image and nurses’ self-concept had opposite signs, but they were in opposite directions as hypothesised for the monotonic model. Moreover, only the coefficient on the nurses’ self-concept was found to be significant. The monotonic constraint was rejected, $F(1, 329) = 36.64, p < .01$. In addition, the quadratic terms did not add significant variance to the model, $F(3, 326) = 0.79, p > .05$. The results showed that the relationship between the leadership image-fit and nurses’ evaluation of their professional competency was linear with only their leadership aptitude serving as a significant predictor.

While the above relationships were linear, the relationship between the caring image-fit and nurses’ evaluation of their job performance based on the organisational criteria produced a different result. In the unconstrained monotonic model, the coefficients on both the perceived public image and nurses’ self-concept were found to be significant predictors of their evaluation of job performance. Both the coefficients were positive, which did not support the monotonic model. Indeed, the monotonic constraint was rejected, $F(1, 328) = 55.95, p < .01$. When the quadratic terms were added to the equation, they significantly increased the explained variance, $F(3, 325) = 4.63, p < .05$. These results suggested that the relationship was curvilinear. The coefficients on the perceived public image, the interaction between the public image and nurses’ self-concept, and higher order term of the nurses’ self-concept were
significant. However, the coefficient on the quadratic term of the perceived public image was insignificant, and all the coefficients on the quadratic terms had opposite signs to the hypothesised optimal and asymptotic models. When the optimal and asymptotic constraints were tested, both constraints were rejected, $F(4, 325) = 18.14, p < .01$, and $F(4, 325) = 17.94, p < .01$, respectively. The cubic terms did not significantly contribute to the variance with nurses’ organisational job performance, $F(4, 321) = 1.32, p > .05$. This led to the conclusion that the relationship was quadratic, but did not support either the optimal or asymptotic model. Further investigation of this curvilinear relationship will be explored using response surface analysis later in this chapter. The focus will be on more detailed examinations of the hypothesised optimal model and how the PEO fit predicts nurses’ evaluation of their job performance.

With regard to the relationship between the caring image-fit and nurses’ evaluation of their professional competency, the variance explained by the unconstrained monotonic model was not significantly different from 0 ($R^2 = .07, p > .05$). Therefore, no further investigation of examination of the monotonic model was pursued. The quadratic terms were tested to see whether or not the insignificant $R^2$ in the unconstrained monotonic model was due to curvilinear relationship between the fit and job performance. However, the quadratic terms were rejected, $F(3, 325) = 0.73, p > .05$. These results indicated that the caring image-fit had no significant association with how nurses’ evaluated their professional competency and expertise.

The results of the relationships between the role fit and nurses’ perception of their job performance are presented in Table 7.23. Compared with the relationships between the image fit and job performance, the variances shared between nurses’ perception of the role fit and their job performance tended to be smaller. As to the relationship between the overall role fit and job performance, the unconstrained model explained significant variance of the job performance ($R^2 = .09, p < .01$). The coefficients on nurses’ role conception and their perception of actual role were both significant, but in the same direction. The monotonic constraint was also rejected, $F(1, 325) = 33.32, p < .01$. Thus, the unconstrained model did not support the monotonic model. When the quadratic terms were added to the model, the $R^2$ was increased by 3%, $F(3, 322) = 3.00, p = .03$, which was statistically significant. These results showed that the relationship was curvilinear. Therefore, the optimal and
asymptotic models were tested. Examination of the coefficients revealed that the coefficients on the interaction term and the quadratic term of nurses’ role conception were insignificant. Moreover, the coefficients on the three variables added to the monotonic model had opposite signs to those hypothesised. In addition, the optimal constrained model explained only 2% of variance with job performance, and when this result was compared with the $R^2$ of the quadratic unconstrained model, the reduction in $R^2$ was found significant, $F(4, 322) = 10.59, p < .01$. This rejected the optimal model. In the same way, the asymptotic was also found to significantly reduce the variance of the unconstrained model, $F(4, 322) = 10.79, p < .01$, thus being rejected. Finally, the cubic terms were tested to see if the further higher-order terms could add a significant variance to the model. The result showed the rejection of cubic terms, $F(4, 318) = 0.84, p > .05$, indicating that the relationship between the overall role-fit and job performance was truly quadratic with nurses’ perception of their actual roles contributing to explaining much of their job performance.

Table 7.23

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model ($B$)</th>
<th>Unconstrained quadratic model ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$E$</td>
<td>$P$</td>
</tr>
<tr>
<td>Role &amp; Job performance</td>
<td>0.11*</td>
<td>0.28**</td>
</tr>
<tr>
<td>Role F1 &amp; JP F1</td>
<td>0.08*</td>
<td>0.32**</td>
</tr>
<tr>
<td>Role F2 &amp; JP F1</td>
<td>-0.03</td>
<td>0.12**</td>
</tr>
<tr>
<td>Role F1 &amp; JP F2</td>
<td>0.17*</td>
<td>0.23*</td>
</tr>
<tr>
<td>Role F2 &amp; JP F2</td>
<td>0.04</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: Role- Role fit, Role F1- role fit in the use of nursing skills, Role F2- Role fit in task delegation, JP F1- Nurses’ evaluation of their job performance based on organisational performance criteria, and JP F2- Nurses’ evaluation of their job performance based on professional competency. 2. The abbreviations in the second row are as follows: E- Actual roles and P- Nurses’ role conception. 3. * $p < .05$, ** $p < .01$. The significance level of $R^2$ in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. $N = 328 – 333$. 5. Constant is omitted in this table. 6. The dependent variable is job performance.
As for the relationships between nurses’ perception of the role-fit in terms of the use of nursing skills and two aspects of their job performance, the results suggested that the relationships were linear, but these relationships did not comply with the monotonic constraint. The variances of the both unconstrained monotonic models were significant. The coefficients on nurses’ desire to use nursing skills and the actual utilisation of them were significant, but the signs of both were positive. The monotonic constraint was rejected in both the relationships, $F(1, 326) = 41.99, p < .01$ for the relationship with meeting the organisational performance criteria, and $F(1, 326) = 11.86, p < .01$ for that with professional competency. The quadratic terms were also rejected in the above relationships, $F(3, 323) = 1.17, p > .05$, and $F(3, 323) = 1.89, p > .05$ respectively. These results denote that nurses’ evaluation of their job performance tends to increase, when they have a higher desire to use nursing skills and when they perceive themselves utilising these skills.

Regarding the fit between nurses’ desire for task delegation and actual task delegation practice, the results suggested that the relationships between this fit and two aspects of their job performance were curvilinear. Concerning their evaluation of job performance based on the organisational criteria, the unconstrained monotonic model was found to explain a significant variance between the task delegation fit and job performance. The coefficient on nurses’ desire for task delegation had an opposite sign to that on their actual roles. However, only the former coefficient was significant, and the monotonic constraint was rejected, $F(1, 329) = 7.50, p < .01$. Thus, the assumptions of the monotonic model were rejected. When the quadratic terms were entered to the regression model, they increased the variance with the job performance significantly, $F(3, 324) = 7.38, p < .01$, suggesting that the relationship was curvilinear. Hence, both the optimal and asymptotic models were tested. In the unconstrained quadratic model, the coefficients on the variables solely related to nurses’ perception of their actual roles were found significant. The optimal constrained model explained 3.6% of variance between the task delegation fit and nurses’ organisational performance, which was significant at $p = .01$. Nevertheless, the results indicated that there was a significant difference, $F(4, 324) = 6.05, p < .01$, between the variances explained by the optimal constrained model ($R^2 = .04$) and the unconstrained quadratic model ($R^2 = .10$). This rejected the optimal constrained model. In the same way, the asymptotic constrained model were rejected, $F(4, 324) =$
7.04, \( p < .01 \), as imposing the constraints reduced the variance explained by the unconstrained model significantly. Finally, the cubic terms were test. The results showed that addition of these higher-order terms did not increase the variance, \( F(4, 320) = 1.30, p > .05 \). The above results illustrated that the relationship between the task delegation fit and nurses’ criteria-based job performance was quadratic, but it was not explained by either the optimal or asymptotic models.

With reference to the relationship between the task delegation fit and nurses’ evaluation of their professional competency, the unconstrained monotonic model explained no significant variance between them. At this point, the monotonic model was rejected. On the other hand, the addition of the quadratic terms increased the variance to the total of 4\% (\( p < .05 \)), which indicated a significant \( R^2 \) change, \( F(3, 327) = 4.39, p < .05 \). This illustrated that the relationship was curvilinear. The optimal and asymptotic models were test to see if the relationship fits either of the models. But, the pattern of the coefficients in the unconstrained quadratic model did not match the hypothesised directions. In addition, the optimal and asymptotic constraints were rejected, \( F(4, 327) = 3.76, p < .05 \), \( F(4, 327) = 3.59, p < .05 \), respectively. The cubic terms were also rejected, \( F(4, 323) = 0.66, p > .05 \). These results led to the conclusion that the relationship between task delegation fit and nurses’ perception of their professional competency was quadratic, but it was explained by neither the optimal nor asymptotic models. Rather Table 7.23 suggests that only nurses’ actual task delegation practice had a significant impact on their professional competency evaluation.

Three curvilinear relationships were identified between the role fit and nurses’ job performance. However, all these relationships were based on the contributions of the monotonic and quadratic terms of only the environmental factor. Therefore, it was less meaningful to conduct a response surface analysis, which could investigate the relationship between the person, the occupation and job performance. Instead, an additional analysis was conducted to identify the best fitting model that would explain nurses’ job performance without constraining the model to the person-occupation fit (i.e., role fit). The results are presented later in this chapter along with the three-dimensional graphs.
Table 7.24

Unconstrained models based on the value-supply fit and job performance.

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model (B)</th>
<th>Unconstrained quadratic model (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>V/S &amp; Job performance</td>
<td>0.18**</td>
<td>0.33**</td>
</tr>
<tr>
<td>V/S F1 &amp; JP F1</td>
<td>0.14**</td>
<td>0.32**</td>
</tr>
<tr>
<td>V/S F2 &amp; JP F1</td>
<td>0.09</td>
<td>0.24**</td>
</tr>
<tr>
<td>V/S F3 &amp; JP F1</td>
<td>0.24**</td>
<td>0.09</td>
</tr>
<tr>
<td>V/S F1 &amp; JP F2</td>
<td>0.22**</td>
<td>0.18</td>
</tr>
<tr>
<td>V/S F2 &amp; JP F2</td>
<td>0.01</td>
<td>0.25*</td>
</tr>
<tr>
<td>V/S F3 &amp; JP F2</td>
<td>0.06</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: V/S- Value-supply fit, V/S F1- Value-supply fit in professional rewards, V/S F2- Value-supply fit in professional challenges, V/S F3- Value-supply fit in organisational support, JP F1- Nurses’ evaluation of their job performance based on organisational performance criteria, and JP F2- Nurses’ evaluation of their job performance based on professional competency. 2. The abbreviations in the second row are as follows: E- Environmental supplies and P- Nurses’ work values. 3. * $p < .05$, ** $p < .01$. The significance level of $R^2$ in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. $N = 325 – 332$. 5. Constant is omitted in this table. 6. The dependent variable is job performance.

The results of the unconstrained models in the value-supply fit are presented in Table 7.24. A medium variance of 14% between the overall value-supply fit and job performance was explained by the unconstrained monotonic model ($p < .01$). The coefficients on the environmental supplies and nurses’ work values were significant, but both of the signs were positive, which rejected the monotonic constrained model. In fact, the monotonic constraint was rejected, $F(1, 322) = 48.88$, $p < .01$. When the quadratic terms were entered to the analysis, it increased the variance by 3%, which was statistically significant at alpha level of .01, $F(3, 319) = 3.83$. This suggested that the relationship was better explained by the curvilinear model. Therefore, the optimal and asymptotic models were tested. The results showed that the coefficients in the unconstrained quadratic model did not follow the appropriate pattern of the directions and significance, as hypothesised in the optimal and asymptotic models. Moreover, imposing the optimal and asymptotic constraints on the unconstrained quadratic
model led to a significant reduction in the explained variance, $F(3, 319) = 15.57, p < .01$, and $F(4, 319) = 15.66, p < .01$, respectively. Hence, these two models were rejected. Finally, the cubic terms were added to the regression analysis, but no significant increment in $R^2$ was observed, $F(4, 315) = 1.10, p = .71$. The above findings suggested that the relationship between the overall value-supply fit and nurses’ perception of their job performance was quadratic with the variables associated with only the environmental supplies serving as predictors. This relationship was re-analysed to identify the best fitting model that explains nurses’ job performance. This result will be presented later in this chapter.

The factor-level analysis of the effects of the value-supply fit is presented in accordance with the two aspects of nurses’ job performance. To begin with, the following section introduces the results of nurses’ evaluation of their job performance based on the organisational performance criteria.

The relationship between the value-supply fit in terms of professional rewards and the criteria-based job performance showed slightly different results from those in the overall value-supply fit. The variance explained by the unconstrained monotonic model was significant with both the value and supply variables. However, the monotonic constraint was rejected in this relationship, $F(1, 323) = 64.13, p < .01$. When the quadratic terms were added to the model, they significantly increased the variance by 2%, $F(3, 320) = 2.86$. After controlling for type I error, however, this increment was considered no longer significant. Thus, further analysis was not conducted. These results indicated that nurses’ evaluation of their job performance based on the organisational criteria was predicted by its positive linear relationship with nurses’ needs for professional rewards and their perception of the actual rewards they received from the environment.

Similar results were observed in the effect of the value-supply fit in terms of professional challenges. The unconstrained monotonic model explained a significant variance with the nurses’ criteria-based job performance. In this relationship, however, only the nurses’ work values turned out to be a significant predictor. The monotonic constraint was rejected in this relationship, $F(1, 323) = 64.13, p < .01$. The quadratic terms increased the variance by 2%, $F(3, 320) = 2.71$, which was initially considered as a significant increment. After controlling type I error, significance could not be achieved. Hence, these results suggested that nurses’ need for professional
challenges positively contributed to their evaluation of their criteria-based job performance.

As to the value-supply fit in terms of organisational support, the unconstrained monotonic model explained 14% of the variance with their criteria-based job performance. Both the coefficients were positive, but only the environmental supply turned out to be a significant predictor. In addition, the monotonic constraint was rejected, $F(1, 329) = 37.41, p < .01$, in this relationship. The quadratic terms were also not accepted, $F(3, 322) = 0.49, p > .05$. Hence, the results showed that the nurses’ evaluation of their criteria-based performance was explained by a positive linear relationship with their perception of actual organisational support.

Next, the results on nurses’ evaluation of job performance based on their professional competency are presented. As to the value-supply fit in terms of professional rewards, the unconstrained monotonic model explained a significant variance with nurses’ perception of their professional competency, although it was quite small. The examination of the individual coefficients revealed that both coefficients were positive and the coefficient on the work values was not significant, which did not support the monotonic model. Consistent with these results, the monotonic constraint was rejected, $F(1, 323) = 13.49, p < .01$. When the quadratic terms were added to the model, they did not significantly increase the variance, $F(3, 320) = 1.68, p > .05$. On these grounds, it was concluded that nurses’ perception of their professional competency was best predicted by a positive linear relationship with their perception of how much rewards they received from their environment.

With reference to the fit between nurses’ need for professional challenges and their perception of the actual challenges they had at work, the monotonic unconstrained model explained a significant variance of their professional competency. However, this variance was small. Both the coefficients were positive and only the coefficient on nurses’ need was significant. Imposing the monotonic constraint was found to even reduce this small variance significantly, $F(1, 329) = 7.07, p < .05$. Adding the quadratic terms was not effective in increasing $R^2$, $F(3, 326) = 1.18, p > .05$. These findings suggest that how nurses evaluate their professional competency depends on how much professional challenges they desire in their practice.
Finally, the impact of the value-supply fit in terms of organisational support was investigated. As shown in the table, the unconstrained monotonic model did not explain much variance with nurses’ perception of their professional competency. The quadratic terms added 3% of the variance, $F(3, 322) = 2.94$, which was initially found significant. After controlling for type I error, this addition was reconsidered no longer significant. These results showed that nurses’ evaluation of their professional competency was related to neither their need for nor their perception of organisational support.

**Graphical Analysis of the Curvilinear Relationships**

The relationship between the caring image fit and nurses’ evaluation of their criteria-based job performance was analysed by response surface analysis and a three-dimensional graph, as both the personal and the environmental variables contributed to explaining their job performance. The rest of the curvilinear relationships with the job performance were predicted only by the environmental variables. As has been mentioned, therefore, these relationships were re-analysed to identify the best fitting models, which would explain nurses’ perception of their job performance, without constraining the models to an effect of the PEO fit. This analysis provided additional information to the results. Three-dimensional graphs illustrating the re-analysed relationships are also presented. However, response surface analysis detailed in the previous chapter was not conducted for these models, as the purpose was not to illustrate the effect of the PEO fit. *(Note: The results of the response surface analysis and three-dimensional graphs illustrating the original four relationships identified by the above polynomial regression analysis are presented in Appendix O for reference.)*

The relationship between the caring image fit and nurses’ perception of their criteria-based job performance was examined first. Prior to conducting response surface analysis, linear data transformation was done in a way that the scales ranged from $-2.50$ to $2.50$ with the scale midpoint of 0. Thus, the negative scores represent negative responses and the positive scores represent positive responses in the following analysis. The locations of the stationary point and the lines of interest and slopes of the surfaces along the lines are presented in Table 7.25.
<table>
<thead>
<tr>
<th>Relationships</th>
<th>Stationary point</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X₀</td>
<td>Y₀</td>
<td>P₁₀</td>
</tr>
<tr>
<td>Caring aptitude fit &amp; criteria-based job performance</td>
<td>4.74</td>
<td>2.70</td>
<td>12.54</td>
</tr>
</tbody>
</table>

**Note.**
1. Columns labelled X₀ and Y₀ contain stationary point coordinates in the xy plane.
2. Columns labelled P₁₀ and P₁₁ contain intercepts and slopes, respectively, of the first principal axis.
3. Columns labelled P₂₀ and P₂₁ contain intercepts and slopes, respectively, of the second principal axis.
4. Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples. * indicates that the value is statistically significant from 0 at alpha level of .05. #1 indicates that the value is statistically different from 1, and #2 indicates that the value is statistically different from -1.

Continued to the next table

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Y = X</th>
<th>Y = – X</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aₓ</td>
<td>aₓ²</td>
<td>aₓ</td>
<td>aₓ</td>
</tr>
<tr>
<td>1</td>
<td>0.54</td>
<td>-0.02</td>
<td>0.52</td>
<td>0.51*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-14.78</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Note.**
1. For each line (Y = X, Y = – X, 1ˢᵗ principal axis, second principal axis), aₓ represents the curvature of the surface along the line, and aₓ represents the slope of the surface along the line at X = 0. 2. *Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples.

The dome-shaped optimal model was hypothesised for this relationship. For this model to be supported, the stationary point should be located at X₀ = 0 and Y₀ = 0 in the xy plane. This is same as stating that the stationary points identified in this relationship should not be significantly different from X = 0 and Y = 0. In the dome-shaped optimal model, the first principal axis runs along the Y = X line (which illustrate the perfect fit between the personal and environment factors, as the score of the each factor correspond to the score on the other), and slope of the surface along that line (therefore along Y = X as well) should be flat. In other words, the intercept (represented as P₁₀) and slope (P₁₁) of the first principal axis should not be significantly different from 0 and 1 respectively. Moreover, the slope of the surface along the first principal axis and the Y = X line at X = 0 (represented as aₓ in the columns of 1ˢᵗ principal axis and the Y = X line) should not be significantly different from 0. In addition, the values indicating the curvature of the surface along those lines (represented as aₓ² in table 7.25) should not be significantly different from 0, which illustrates a linear surface.
On the other hand, the second principal axis in the dome-shaped optimal model runs along the \( Y = - X \) line (which illustrate the perfect misfit, as the score of the personal factor is opposite to that on the environmental factor), and the slope of the surface along the line (therefore the \( Y = - X \) line) is curved downward toward the both ends of the \( Y = - X \) line. Consequently, the intercept (represented as \( P_{20} \)) and slope (\( P_{21} \)) of the second principal axis should not be significantly different from 0 and \(-1\) respectively. Moreover, the slope of the surface along the second principal axis and the \( Y = - X \) line at \( X = 0 \) (represented as \( a_x \) in the columns of 2\(^{nd}\) principal axis and the \( Y = - X \) line) should not be significantly different from 0. On top of that, the values indicating the curvature of the surface along those lines (represented as \( a_x^2 \) in table 7.25) should be negative and significantly different from 0, which illustrates that the surface is curved downward. The predicted three-dimensional figure and the contour plot of this relationship are presented in Figure 7.4.

\[\text{Figure 7.4. 3D and 2D figures illustrating the relationship between the caring image fit and criteria-based job performance}\]

**Note.** In 2D figure, Axis E (y-axis) represents scores of the perceived public image, whereas Axis P (x-axis) represents the scores of the nurses’ self-concept. The \( Y = X \) line is represented as a straight line, and the \( Y = - X \) line is represented as a dotted line. The thicker line indicates the 1\(^{st}\) principal axis, while the thicker dotted line indicates the 2\(^{nd}\) principal axis.

In contrast to the hypothesised dome-shaped model, Figure 7.4 illustrates that the relationship between the caring image fit and the criteria-based job performance was bowl-shaped. Table 7.25 shows that the stationary point in this relationship was located at \( X = 4.74, Y = 2.70 \), which was outside the scale ranges. However, these two coordinates were not statistically significant from 0, supporting the assumption of the optimal model. The first principal axis was located outside the scale ranges, therefore
not illustrated in the figure. The statistics showed that $P_{10}$ was not significantly
different from 0. But, $P_{11}$ was negative and the confidence interval of $P_{11}$ did not
include 1. These suggested that the first principal axis was rotated off the $Y = X$ line
and parallel to the $Y = -X$ line (the confidence interval of $P_{11}$ includes $-1$). On the
other hand, Table 7.25 shows that the slope of the second principal axis, represented
as $P_{21}$, was 0.48 and was significantly different from $-1$. As shown in Figure 7.4, the
second principal axis runs along the $Y = X$ line (the confidence interval of $P_{21}$
includes 1) in contrary to the assumption of the dome-shaped model. The locations of
these two principal axes rejected the assumptions of the dome-shaped model. Instead,
they supported the bowl-shaped model. Consistent with the bowl-shaped optimal
model, there was no lateral shift of the second principal axis from the $Y = X$ line, as
indicated by the quantity of $-P_{21}^2 (1 + P_{21}) = 0.28 (P > .05)$.

Figure 7.4 shows that the surface along the $Y = X$ line was positively sloped.
Yet, neither $a_x$ nor $a_x^2$ of the $Y = X$ line were significantly different from 0, indicating
that the slope and curvature of the surface along the $Y = X$ line was flat and linear.
This supported the dome-shaped model. Table 7.25 also suggests the curvature of the
surface along the $Y = -X$ line was curved upward ($a_x^2 = 0.51, p < .05$), instead of
going downward illustrating the dome-shaped model. In total, the above results
rejected the hypothesised dome-shaped model, which assumed that nurses’ job
performance would reach the maximum point when they perceived their public image
was congruent with their self-concept, but it would reach the minimum when there
was incongruence.

Not only the results of response surface analysis informed of whether or not
the relationship between the caring image fit and job performance supported the
hypothesised model, but they also provided information of how nurses’ evaluation of
their criteria-based job performance could be explained. For example, a slight upward
slope of the surface along the $Y = X$ line indicated that nurses’ evaluation of their job
performance was low, when they had negative images on both themselves and their
public image. The slope also indicated that nurses’ job performance increased, as they
perceived more positive images on both themselves and their public image. However,
their evaluations did not differ significantly as indicated by the slope along the $Y = X$
line, which was not significantly different from 0. In other words, nurses who
perceived the caring image fit, regardless of their images being positive or negative,
tended to evaluate their criteria-based job performance in the same way. Response surface analysis also illustrated that nurses’ evaluation of the job performance tended to increase, as they perceived a greater misfit. This was illustrated by the upward curvature along the $Y = -X$ line, where the degree of nurses’ agreement on themselves as being caring corresponded to the degree of their disagreement on how the public saw them as being caring. In other words, nurses tended to evaluate their job performance positively, when they saw themselves caring while they viewed the public see them uncaring. Nurses also tended to rate their job performance positively when they saw themselves as being uncaring while they believed the public saw them caring. In reality, only 1.7% of nurses rated their caring aptitude below the midpoint of the scale, and only 2.6% of nurses rated their public image of being caring below the scale midpoint (based on a total sample of 344 nurses with 2 missing values)\(^{11}\). Moreover, none of these nurses rated both their caring aptitude and their public image negatively. These results, thus, suggested that there was a small group of nurses, who perceived the caring image misfit and they had a tendency to evaluate their criteria-based job performance positively. Finally, response surface analysis showed that nurses’ evaluation of their job performance was low along the second principal axis. This suggested that nurses tended to evaluate their criteria-based job performance poorly, when they perceived themselves not being caring and perceived their public image even more negatively than their self-image. It also suggested that when nurses perceived themselves being caring and perceived their public image even more positively than their self-concept, they tended to evaluate their performance lower than the other nurses, who also had a positive self-concept, but perceived their public image slightly more negatively than how they saw themselves. As has been stated, most of the responses fell within the positive ranges of x- and y-axes, and the surface in this range showed an upward curvature along the second principal axis. Consequently, it is more practical to interpret that the majority of nurses tend to perceive themselves and their public image positively in terms of their caring image. Among them, those who perceive their self-concept more positively than their perception of their public image tend to evaluate their job performance relatively

\(^{11}\) When all the cases ($N = 343$) were included in the analysis, the regression equation for the unconstrained quadratic model became $4.73 + 0.21X + 0.18Y + 0.05X^2 - 0.14XY + 0.16Y^2$, $R^2 = .17$. The significance of the coefficients and the results of the response surface analysis remained unchanged.
more positively (This is illustrated by the second principal axis slightly rotated off the 
Y = X line).

The rest of the curvilinear relationships were re-analysed by simultaneous 
regression analysis. A few variables were removed from the unconstrained quadratic 
model until the rest of the variables became significant. Removing the variables did 
not change the explained variances or the shapes of the three-dimensional figures 
illustrated by nurses’ professional needs, the environmental/job characteristics and job 
performance significantly (see the figures in Appendix O). However, this procedure 
made it clearer which variables contributed to explaining nurses’ job performance 
without losing the effects of the potential monotonic predictors. These potential 
monotonic predictors may have been subsumed by the effects of the higher order and 
the interaction terms in the previous analysis.

The results are presented in Table 7.26. Table 7.26 shows that, in three out of 
the four relationships, both the personal and the environmental factors were found to 
be the predictors of nurses’ perception of their job performance. However, the 
interaction term between them were found to be insignificant in all the relationships, 
suggesting that the personal and the environmental factors individually contributed to 
explaining their job performance.

Table 7.26
Results of re-analysed models

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Constant</th>
<th>E</th>
<th>P</th>
<th>E’</th>
<th>R'</th>
<th>F-change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall role &amp; Job performance</td>
<td>4.66**</td>
<td>0.22**</td>
<td>0.28**</td>
<td>0.11*</td>
<td>.12**</td>
<td>F(3, 328) = 5.27**</td>
</tr>
<tr>
<td>Task delegation &amp; criterion-based performance</td>
<td>4.95**</td>
<td>0.09**</td>
<td>0.07**</td>
<td>0.06**</td>
<td>.10**</td>
<td>F(3, 340) = 3.72**</td>
</tr>
<tr>
<td>Task delegation &amp; professional competency</td>
<td>4.27**</td>
<td>0.19**</td>
<td>-</td>
<td>0.08**</td>
<td>.04**</td>
<td>F(2, 342) = 6.06**</td>
</tr>
<tr>
<td>Overall value-supply &amp; job performance</td>
<td>4.66**</td>
<td>0.33**</td>
<td>0.25**</td>
<td>0.21**</td>
<td>.16**</td>
<td>F(3, 327) = 6.88**</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the first row are as follows: E- Environmental factor and P-
Nurses’ personal factor in the respected relationships. 2. N ranges from 331 to 345. 3.
Unstandardised coefficients (B) are presented. 3. * p < .05, ** p < .01.

As for the relationship between the overall role fit and their job performance, 
Table 7.26 shows that the monotonic term of nurses’ role conception and the
monotonic and quadratic terms of their perception of the actual role were the predictors of their evaluation of the overall job performance. This relationship is illustrated in Figure 7.5. Linear transformation of the data was conducted in the same way as it was done in the response surface analysis for consistency. Thus, the scale ranged from \(-2.50\) to \(+2.50\) with the scale midpoint of 0. The results of the regression analysis and Figure 7.5 show that the curvature along x-axis (i.e., actual roles) was curved upward, but the slope of the surface was flat (the coefficient on E becomes 0 after the data transformation). This illustrates that nurses tended to see their job performance positively when they perceived they were fulfilling many of their nursing roles. The evaluation of their job performance gradually decreased, as nurses perceived themselves fulfilling their roles to a lesser degree. When the score on their perception of actual roles equated to the midpoint of the scale, nurses tended to see their job performance most negatively. After passing this point, their perception of the job performance started to increase gradually, as they perceived themselves fulfilling less and less roles.

![Figure 7.5. 3D model predicting nurses’ perception of their overall job performance from the nursing role scores.](image)

While perception of actual role showed a curvilinear relationship, nurses’ role conception showed a positive linear relationship with their perception of job performance. This indicates that nurses’ perception of the overall job performance steadily increases, as they have a higher expectation of their roles. Consequently, the results showed that nurses evaluated their job performance most positively, when they had a high role conception and perceived themselves fulfilling either many or few nursing roles. In contrast, the results showed that nurses saw their job performance
most negatively, when they had a low role conception and saw themselves fulfilling neither many nor few nursing roles.

Figure 7.6 presents the predicted model of nurses’ perception of their criteria-based performance based on their need for task delegation and actual task delegation practice. Figure 7.6 illustrates an upward curve along x-axis. The slope of the surface was slightly negative at $X = 0$ (the coefficient on $E$ becomes $-0.03$ after the data transformation). In this figure, nurses’ perception of their criteria-based job performance increased, when they perceived themselves delegating either many or few basic tasks to other health care personnel. Nurses’ evaluation of their job performance was low at $X = 0.25$, which was nearly the midpoint of the scale. This suggested that nurses tended to see their job performance poorly when they delegated neither many nor few of their tasks to others.

![3D model predicting nurses' perception of their criteria-based job performance from the task delegation scores.](image)

The slope along y-axis, which represented the scores on nurses’ task delegation need, was positive and linear. The slope itself was very mild ($B_{after-transformation} = 0.07, p < .01$), but indicated that nurses’ perception of their job performance steadily and slowly increased, when they had a higher need for task delegation. These results suggested that nurses tended to see their criteria-based performance poorly when they had a low role conception and engaged in the medial level of task delegation. Nurses’ perception of the job performance increased, as they had a high role expectation and perceived themselves delegating either many or few of their basic tasks to other health care personnel.
The same predictor variables were tested to identify the best model predicting nurses’ perception of their professional competency. As shown in Table 7.26, only the variables related to actual task delegation practice were retained in the model. Figure 7.7 illustrates this relationship. The surface along x-axis showed an upward curve and a slightly positive slope at \( X = 0 \) (the coefficient on \( E \) becomes 0.03 after the data transformation). Therefore, nurses’ perception of their professional competency became positive when they saw themselves delegating either many or few basic tasks to their subordinates. The point at which nurses saw their performance poorest was predicted at \( X = -1.19 \). This result showed that nurses tended to see their job performance poorly when they delegated relatively few tasks. The negative shift of this point and a positive slope along x-axis also suggested that nurses who saw themselves delegating many of their basic tasks tended to evaluate their professional competency slightly more positively than those who saw themselves not delegating their tasks.

![Figure 7.7. 3D model predicting nurses’ perception of their professional competency from the task delegation scores.](image)

Finally, the figure illustrating the relationship between the overall value-supply fit and nurses’ perception of their job performance is presented in Figure 7.8. The surface along x-axis showed an upward curve and a slightly negative slope at \( X = 0 \) (the coefficient on \( E \) becomes \(-0.09\) after the data transformation). The lowest point at which nurses evaluated their job performance was predicted at \( X = 0.21 \), which was close to the scale midpoint. This figure illustrates the same relationships as indicated above. When nurses perceived themselves being provided with the maximum
supplies, they tended to see their job performance very positively. As their perception of the environmental supplies decreased, their evaluation of the job performance tended to decrease gradually. When they saw their environment providing medial supplies, they saw their job performance to be poorer. As nurses saw themselves receiving less and less environmental supplies, their evaluation of the job performance sprang back to be positive.

![3D model predicting nurses' perception of their overall job performance from the value-supply scores.](image)

*Figure 7.8. 3D model predicting nurses’ perception of their overall job performance from the value-supply scores.*

The line along the y-axis showed a positive linear slope. This suggests that nurses’ perception of their job performance increases, as their work values become higher. Consequently, nurses, who had low work values and perceived moderate environmental supplies, tended to see their job performance most negatively. In contrast, nurses, who had high work values and perceived the maximum or least environmental supplies, tended to evaluate their job performance very positively.

To sum up, the hypothesis 8 was not supported by any of the relationships examined above. The results showed that many of the relationships between the personal and the environmental factors and nurses’ perception of their job performance were linear. Five relationships were found to be curvilinear, but did not support the hypothesised dome-shaped optimal model.
Hypothesis 9

Hypothesis 9: Negative relationships exist between the perceived fit in their image, roles and work values and nurses’ turnover intention.

The same procedures used to test hypothesis 8 were repeated to examine this hypothesis. As the instrument measuring turnover intention had only one factor, the factor-level analysis was done by crossing each factor of the predictor variables with the grand mean of turnover intention (i.e., overall turnover intention score). Prior to hypothesis testing, the effects of the demographic variables on nurses’ turnover intention were examined. None of the demographics were found to be significant.

The Results of Polynomial Regression Analysis

First, nurses’ turnover intention was examined using the image fit as a predictor. The results of the unconstrained monotonic and quadratic models are presented in Table 7.27.

Table 7.27
Unconstrained models based on the image fit and turnover intention.

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model (B)</th>
<th>Unconstrained quadratic model (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>Image &amp; Turnover intention</td>
<td>-0.25**</td>
<td>-0.47**</td>
</tr>
<tr>
<td>Image F1 &amp; Turnover</td>
<td>-0.22**</td>
<td>-0.33**</td>
</tr>
<tr>
<td>intention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image F2 &amp; Turnover</td>
<td>-0.33**</td>
<td>-0.47**</td>
</tr>
<tr>
<td>intention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: Image- Image fit, Image F1- Image fit in leadership aptitude, Image F2- Image fit in caring aptitude. 2. The abbreviations in the second row are as follows: E- Perceived public image and P- Nurses’ self-concept. 3. * p < .05, ** p < .01. The significance level of R² in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. N = 330 – 334. 5. Constant is omitted in this table. 6. The dependent variable is turnover intention.

With regard to the relationship between the overall image fit and nurses’ turnover intention, Table 7.27 shows that the unconstrained monotonic model explained 10% of the variance with nurses’ turnover intention (p < .01). The coefficients on both the perceived public image of nurses and nurses’ self-concept
were significant, but both the coefficients were negative. The monotonic constraint was rejected in this relationship, $F(1, 331) = 36.04, p < .01$. Moreover, there was no significant increment in $R^2$ after adding the quadratic terms to the monotonic equation, $F(3, 328) = 0.20, p = .20$. These results suggest that nurses’ turnover intention can be predicted by the monotonic terms of nurses’ perception of their overall public image and their self-concept. In other words, nurses’ intention to quit their job tends to decrease, when they have positive self-concept and perceive their public image positively.

The same results were observed in the factor-level analysis. The unconstrained monotonic models in the leadership and caring aptitudes as predictors explained significant variances with nurses’ turnover intention. Furthermore, the coefficients on both nurses’ self-concept and their perception of the public image were significant and negative. The monotonic constraint was rejected in both relationships, $F(1, 329) = 22.64, p < .01$ for the leadership aptitude, and $F(1, 327) = 55.59, p < .01$ for the caring aptitude. Moreover, addition of the quadratic terms did not increase the variance, $F(3, 326) = 0.07, p > .05$ for the leadership aptitude, and $F(3, 324) = 1.03, p > .05$ for the caring aptitude. These results led to the same conclusion that when nurses had positive self-concept and perceived their public image positively, they tended to show less intention to leave their jobs. Given that the variance shared between the caring image fit and nurses’ turnover intention ($R^2 = .15$) was more than double the size of the variance shared between the leadership image fit and turnover intention ($R^2 = .07$), nurses’ image of being caring appears to have a stronger impact on their turnover intention.

To sum up, the above results did not support hypothesis 9. Instead, they indicated that there was a linear negative relationship between nurses’ self-concept, the perceived public image and their turnover intention. The results also showed that the coefficients on nurses’ self-concept in all three relationships were larger than those on the perceived public image of nurses. This indicated that how nurses saw themselves had a stronger impact on their turnover intention than how they saw the public view them.

The results of the relationship between the role fit and nurses’ turnover intention is presented in Table 7.28. As to an impact of the overall role fit, the unconstrained monotonic model showed a significant variance with nurses’ turnover
intention. Both coefficients were negative and only the coefficient on nurses’ perception of their actual roles was significant. These did not support the monotonic model. In fact, the monotonic constraint was rejected, $F(1, 326) = 25.19, p < .01$.

Table 7.28

Unconstrained models based on the role fit and turnover intention.

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model ($B$)</th>
<th>Unconstrained quadratic model ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>Role &amp; Turnover intention</td>
<td>-0.46**</td>
<td>-0.10</td>
</tr>
<tr>
<td>Role F1 &amp; Turnover intention</td>
<td>-0.44**</td>
<td>-0.22**</td>
</tr>
<tr>
<td>Role F2 &amp; Turnover intention</td>
<td>-0.10*</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: Role- Role fit, Role F1- Role fit in the use of nursing skills, Role F2- role fit in task delegation. 2. The abbreviations in the second row are as follows: E- Actual roles and P- Nurses’ role conception. 3: * $p < .05$, ** $p < .01$. The significance level of $R^2$ in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. N = 329 – 330. 5. Constant is omitted in this table. 6. The dependent variable is turnover intention.

As shown in the unconstrained quadratic model, the addition of the quadratic terms significantly increased the variance by 3%, $F(3, 323) = 3.17, p < .05$. The coefficients on the quadratic terms were appropriate directions as hypothesised in the optimal and asymptotic models. The coefficients on the quadratic terms of nurses’ role conception and their actual roles were also significant as hypothesised. However, the interaction term was insignificant, and the coefficients on the monotonic terms did not follow the hypothesised pattern of both the optimal and asymptotic models. Both the constrained optimal and asymptotic models explained about 6% of the variance with nurses’ turnover intention. Compared with the $R^2$ of the unconstrained model, significant reduction in the $R^2$ was observed in the optimal constrained model, $F(4, 323) = 8.03, p < .01$ and in the asymptotic constrained model, $F(4, 323) = 8.50, p < .01$. The above results showed that none of the proposed models were accepted. Finally, the cubic terms were added to the model, but there was no significant increment in the $R^2$, $F(4, 319) = 0.35, p > .05$. These results suggested that the
relationship between the overall role fit and nurses’ turnover intention was quadratic and had different features to the hypothesised model.

When the factor-level analysis was conducted, it revealed that above result was the combination of two different relationships. Whereas the relationship between the fit in the use of nursing skills and nurses’ turnover intention showed a linear relationship, the relationship between the fit in task delegation and their turnover intention showed a curvilinear relationship. This can be more clearly seen in the response surface analysis where the visual inspection of the relationships is possible. As to the former relationship, the total variance explained by the unconstrained monotonic model was significant. Both the coefficients on nurses’ need for skill utilisation and actual utilisation of their skills were also identified as being significant. Yet, the directions of the coefficients were different to the constrained monotonic model, as both coefficients were negative in the unconstrained model. The monotonic constraint was rejected, $F(1, 327) = 34.90, p < .01$, as it reduced the explained variance by 9%. As has been stated, the quadratic terms were rejected, $F(3, 324) = 1.08, p > .05$, as they increased the variance by only 1%. These results suggested that the relationship between the fit in the use of nursing skills and nurses’ turnover intention was linear with both nurses’ desires and their perception of the actual roles acting as predictors.

Regarding the relationship between the task delegation fit and nurses’ turnover intention, the unconstrained monotonic model explained a small variance of 2% ($p < .05$). Although only the coefficient on actual task delegation opportunity turned out to be significant, the coefficients on both variables were in the hypothesised direction of the constrained monotonic model. Furthermore, the monotonic constraint was accepted, $F(1, 327) = 0.01, p > .05$. While these findings appeared to support the monotonic model, the results suggested that the relationship was better explained by a quadratic model. This is because, as shown in the unconstrained quadratic model, the addition of the quadratic terms significantly increased the $R^2$ by 5%, $F(3, 324) = 5.73, p < .01$. Only the coefficient on the interaction term was identified as being significant in the unconstrained quadratic model. Yet, the coefficients on both the quadratic terms of nurses’ needs and actual practice were also close to the significant level, as indicated by their 95% confidence intervals ranging from –0.02 to 0.10 for actual task delegation practice and –0.01 to 0.19 for task delegation need. The coefficients on the
quadratic terms were in the proposed directions in the optimal and asymptotic models. When the variance of the constrained model was compared with that of the unconstrained model, it was found that there was no significant difference (reduction) in the $R^2$ between the unconstrained quadratic model and the constrained optimal model, $F(4, 324) = 1.04, p > .05$. In contrast, the asymptotic constraints significantly reduced the variance of the unconstrained model, $F(4, 324) = 3.48, p < .01$. These results illustrated that the relationship between the task delegation fit and turnover intention was close to the hypothesised optimal model. To eliminate a possibility for the cubic relationship, the cubic terms were tested. The result showed rejection of the cubic terms, $F(4, 320) = 0.45, p > .05$. This reinforced the support for the optimal model. The relationships identified as being curvilinear was be further analysed by response surface analysis and reported later in this chapter.

Table 7.29

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Unconstrained monotonic model ($B$)</th>
<th>Unconstrained quadratic model ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>V/S &amp; Turnover intention</td>
<td>-0.79**</td>
<td>0.11</td>
</tr>
<tr>
<td>V/S F1 &amp; turnover intention</td>
<td>-0.65**</td>
<td>0.09</td>
</tr>
<tr>
<td>V/S F2 &amp; turnover intention</td>
<td>-0.45**</td>
<td>-0.00</td>
</tr>
<tr>
<td>V/S F3 &amp; turnover intention</td>
<td>-0.55**</td>
<td>0.19*</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the left column are as follows: V/S- Value-supply fit, V/S F1- Value-supply fit in professional rewards, V/S F2- Value-supply fit in professional challenges, V/S F3- Value-supply fit in organisational support. 2. The abbreviations in the second row are as follows: E- Environmental supplies and P- Nurses’ work values. 3. * $p < .05$, ** $p < .01$. The significance level of $R^2$ in the factor-level analysis is controlled by the sequential Bonferroni procedure. 4. $N = 322 – 331$. 5. Constant is omitted in this table. 6. The dependent variable is turnover intention.

The results of the relationship between the value-supply fit and nurses’ turnover intention is presented in Table 7.29. As show in the table, all the unconstrained monotonic models explained significant variances with nurses’
intention to quit their jobs. The coefficients on all the aspects of the environmental supplies were significant, while only the coefficient on nurses’ need for organisational support was identified as being significant. The directions of the coefficients were congruent with those hypothesised in the monotonic model, except that both need for and supplies of professional challenges were found to have negative signs. When the monotonic constraint was imposed, the variances of the unconstrained models tended to loose as much as half of their original variances. Hence, all the relationships rejected the monotonic constraint ($F$-scores varied from 17.90 to 43.82, $p < .01$).

Table 7.29 also shows the results of the unconstrained quadratic models. Compared with the variances of the unconstrained monotonic models, it was apparent that addition of the quadratic terms did not increase much of the variance from the monotonic model. In fact, all the relationships rejected the quadratic terms ($F$-scores range from 0.70 to 1.57, $p > .05$). Overall, the above findings illustrate that nurses’ turnover intention can be predicted by how nurses perceive the environmental supplies. The results showed that nurses’ turnover intention tended to increase when they perceived their environment providing them with poor professional rewards, challenges and organisational support.

Graphical Analysis of the Curvilinear Relationships

Two relationships, which have been identified as being curvilinear, were analysed by response surface analysis, as both the personal and environmental variables contributed to explaining nurses’ turnover intention. The locations of the stationary points and the lines and slopes of the surfaces of the interest in these two relationships are presented in Table 7.30.
Table 7.30

Results of response surface analysis

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Stationary point</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>X₀</strong></td>
<td><strong>Y₀</strong></td>
<td><strong>P₁₀</strong></td>
</tr>
<tr>
<td>1. Overall role fit &amp; turnover intention</td>
<td>1.69</td>
<td>1.85</td>
<td>7.74</td>
</tr>
<tr>
<td>2. Task delegation fit &amp; turnover intention</td>
<td>0.66</td>
<td>1.21</td>
<td>2.11</td>
</tr>
</tbody>
</table>

*Note.* ¹ Columns labelled X₀ and Y₀ contain stationary point coordinates in the xy plane. ² Columns labelled P₁₀ and P₁₁ contain intercepts and slopes, respectively, of the first principal axis. ³ Columns labelled P₂₀ and P₂₁ contain intercepts and slopes, respectively, of the second principal axis. ⁴ Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples. * indicates that the value is statistically significant from 0 at alpha level of .05. #1 indicates that the value is statistically different from -1, and #2 indicates that the value is statistically different from 1.

Continued to the next table

<table>
<thead>
<tr>
<th>Relationships</th>
<th>(Y = X)</th>
<th>(Y = -X)</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a_x)</td>
<td>(a_x^2)</td>
<td>(a_x)</td>
<td>(a_x^2)</td>
</tr>
<tr>
<td>1</td>
<td>-1.76*</td>
<td>0.49*</td>
<td>0.84</td>
<td>0.74*</td>
</tr>
<tr>
<td>2</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.25</td>
<td>0.29*</td>
</tr>
</tbody>
</table>

*Note.* ¹ For each line (\(Y = X\), \(Y = -X\), 1st principal axis, second principal axis), \(a_x^2\) represents the curvature of the surface along the line, and \(a_x\) represents the slope of the surface along the line at \(X = 0\). ² Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples.

The bowl-shaped optimal model was hypothesised for the PEO fit predicting nurses’ turnover intention. In this model, the stationary point should be located at \(X₀ = 0\) and \(Y₀ = 0\) in the xy plane. This is same as stating that the stationary points identified in the two relationships should not be significantly different from \(X = 0\) and \(Y = 0\). In the bowl-shaped optimal model, the first principal axis runs along the \(Y = -X\) line (which illustrate the perfect misfit between the personal and environment factors, as the score of the personal factor is opposite to the score of the other), and slope of the surface along that line (therefore along the \(Y = -X\) as well) should be curved upward toward the both ends of the \(Y = -X\) line. In other words, the intercept (represented as \(P₁₀\)) and the slope (\(P₁₁\)) of the first principal axis should not be significantly different from 0 and –1 respectively. Moreover, the slope of the surface along the first principal axis and the \(Y = -X\) line at \(X = 0\) (represented as \(a_x\) in the columns of the 1st principal axis and the \(Y = X\) line) should not be significantly different from 0. In addition, the values indicating the curvature of the surface along
those lines (represented as $a_x^2$ in Table 6.44) should be positive and significantly different from 0, which illustrates that surface is curved upward.

On the other hand, the second principal axis runs along the $Y = X$ line (which illustrates the perfect fit, as the score of the each factor correspond to the score on the other), and the slope of the surface along the line (therefore the $Y = X$ line) should not be curved. Consequently, the intercept (represented as $P_{20}$) and slope ($P_{21}$) of the second principal axis should not be significantly different from 0 and 1 respectively. Moreover, the slope of the surface along the second principal axis and the $Y = X$ line at $X = 0$ (represented as $a_x$ in the columns of the 2nd principal axis and the $Y = X$ line) should not be significantly different from 0. On top of that, the values indicating the curvature of the surface along those lines (represented as $a_x^2$ in Table 7.32) should not be significantly different from 0, which illustrates that surface is linear.

Figure 7.9 presents three- and two-dimensional figures illustrating the relationship between the overall role fit and nurses’ turnover intention.

Figure 7.9. 3D and 2D figures illustrating the relationship between the overall role fit and turnover intention

Note. In 2D figure, Axis E (y-axis) represents scores of the actual roles, whereas Axis P (x-axis) represents the scores of the nurses’ role conception. The $Y = X$ line is represented as a straight line, and the $Y = -X$ line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

The stationary point was located at $X_0 = 1.69$ and $Y_0 = 1.85$ in the xy-plane. The confidence intervals of both $X_0$ and $Y_0$ included 0, meaning that the stationary point was located in the hypothesised point. The first principal axis was located at $Y = 7.74 - 3.49X$. The intercept of the first principal was not significantly different from
0, and its slope was also not different from −1. The second principal axis was located at \( Y = 1.37 + 0.29X \). The confidence intervals of both the intercept and slope included the hypothesised points of 0 and 1 respectively. These results supported the bowl-shaped optimal model. There was no lateral shift of the second principal axis from the \( Y = X \) line, as illustrated by the quantity of \(- P_{20'}(1 + P_{21}) = 1.06, p > .05\). Again, this result supported the hypothesised model.

The surface along the \( Y = X \) line was negatively sloped (\( a_x = -1.76, p < .05 \)), and its curvature showed an upward curve (\( a_x^2 = 0.49, p < .05 \)). These findings were not congruent with the hypothesis that the surface along \( Y = X \) line would be flat and linear. On the other hand, the surface along the \( Y = -X \) line supported the hypothesis. The slope of the surface along the \( Y = -X \) line was flat (\( a_x = 0.84, p > .05 \)), and its curvature showed an upward curve (\( a_x^2 = 0.74, p < .05 \)). These results suggested that nurses’ turnover intention became minimum, when they had high role expectations and their expectations were met by their actual roles. This point was reflected at the location of the stationary point. In contrast, nurses’ turnover intention progressively increased, as the scores on both nurses’ role conception and their actual roles shifted to the lower points of the scales. In addition, the results showed that nurses’ turnover intention also increased progressively, when they perceived that their role expectations contradicted their actual roles.

The surfaces of the principal axes provided additional information illustrating nurses’ turnover intention. As for the first principal axis, the slope of the surface was flat, as indicated by \( a_x = -19.01, p > .05 \). However, its curvature showed a very steep upward curve (\( a_x^2 = 5.64, p < .05 \)) as the scores on nurses’ role conception fell below the midpoint of the scale. Moreover, this curve was far stronger than the degree of the curves along the \( Y = -X \) line. This suggests that when nurses engage in a large range of roles, and when they have very low desires to do so, their turnover intention increases even more strongly than when they perceive a perfect misfit. In reality, none of nurses rated their role conception below the scale midpoint. On the other hand, the flat and linear surface (\( a_x = -0.69, p > .05, a_x^2 = 0.20, p > .05 \)) along the second principal axis showed that nurses’ turnover intention tended to be constant when their role conception moderately exceeded their perception of actual roles.

As has been stated, this curvilinear relationship between the overall role fit and nurses’ turnover intention appeared to be the product of two different relationships.
The results of the polynomial regression analysis showed that the relationship between the fit in the use of nursing skills and nurses’ turnover intention was linear in which both nurses’ need and actual skill utilisation were negatively associated with their turnover intention. This relationship is illustrated in Figure 7.10.

Figure 7.10. 3D figure illustrating the relationship between the fit in the use of nursing skills and nurses’ turnover intention.

In contrast, the relationship between the task delegation fit and turnover intention was curvilinear as shown in Figure 7.11. The negative slope along the $Y = X$ line in Figure 7.9 reflects the negative linear slope in Figure 7.10, while the upward curve along the $Y = -X$ line in Figure 7.9 is reflected by the same upward curve along the $Y = -X$ line in Figure 7.11.
Figure 7.11. 3D and 2D figures illustrating the relationship between the task delegation fit and turnover intention

Note. In 2D figure, Axis E (y-axis) represents scores of the actual task delegation opportunities, whereas Axis P (x-axis) represents the scores of the nurses’ need for the task delegation. The Y = X line is represented as a straight line, and the Y = –X line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

The stationary point in Figure 7.11 was located at X₀ = 0.66 and Y₀ = 1.21, both of which were not significantly different from 0. The first principal axis was parallel to the Y = –X line, as indicated by the intercept (P₁₀ = 2.11) and the slope (P₁₁ = –1.36) of the first principal axis, which were not different from the hypothesised values of 0 and –1 respectively. The second principal axis was also located along the hypothesised line of the Y = X line (P₂₀ = 0.73 and the 95% CI ranged from –2.12 to 1.28; P₂₁ = 0.73 and the 95% CI ranged from 0.34 to 1.68). There was no indication of the second principal axis laterally shifting from the Y = X line, –P₂₀/ (1 + P₂₁) = 0.42, p > .05. All these findings supported the hypothesised bowl-shaped model.

The surface along the Y = X line showed flatness (aₓ = 0.01, p > .05) and linearity (aₓ² = –0.02, p > .05), supporting the hypothesis. The surface along the Y = –X line showed flatness (aₓ = 0.25, p > .05) and an upward curve (aₓ² = 0.29, p < .05). The features of these surfaces supported the bowl-shaped optimal model. The slope of the surface along the first principal axis was flat when it crossed the y-axis (aₓ = –0.56, p > .05). But, the surface along the first principal axis showed a stronger upward curve (aₓ² = 0.42, p < .05) than that along the Y = –X line. The slope of the surface along the second principal axis was flat (aₓ = –0.56, p > .05) when it crossed y-axis. Moreover, the curvature of the surface indicated linearity (aₓ² = –0.02, p > .05). This
model illustrated that nurses’ turnover intention was constantly low, when they perceived the perfect fit between their task delegation needs and how they actually delegated their tasks. Their turnover intention was even lower, when their task delegation need slightly exceeded actual task delegation practice. This was indicated by the location and the surface of the second principal axis. However, their turnover intention increased, as their task delegation need deviated from actual task delegation practice. This was indicated by the surface along the Y = – X line representing the perfect misfit. Nurses’ turnover intention became even stronger when they had a low desire for task delegation but they did very often delegate their tasks in practice. This was indicated by the surface along the first principal axis. This surface also showed the stronger turnover intention of nurses, when their desire for task delegation increased, while the actual opportunities decreased more gradually than it was expressed by the perfect misfit.

Hypothesis 9 investigated the relationship between the PEO fit and nurses’ turnover intention. Contrary to the hypothesised model, the majority of the relationships showed linear relationships with nurses’ turnover intention, with either or both the personal and/or the environmental factors showing negative contributions. Two relationships were found to be curvilinear, only one of which was consistent with the hypothesised bowl-shaped optimal model.

Summary

This chapter presented the results of the hypothesis testing, which was conducted using a variety of statistical procedures. Hypothesis 1, predicting the relationships between nurses’ perception of their public image, their actual roles and the environmental supplies they received in their organisation, was partially supported. There was a relatively strong relationship between the perceived public image of nurses and nurses’ perception of environmental supplies. As for the relationship between the public image and actual roles, however, the perceived public image was only related to their perception of overall nursing roles and the use of nursing skills. Hypothesis 2, postulating the difference between nurses’ self-concept and their perceived public image, was also partially supported. There were statistically significant differences between the overall nurses’ self-concept and the public image of them and between nurses’ perception of their leadership aptitude and their perception of the public image of nurses as being leaders. In terms of the relationship
between nurses’ self-concept and the public image of nurses as being caring, no difference was found in the analysis. As opposed to the hypothesis, nurses rated their public image of being caring more positively than their own rating of themselves. Hypothesis 3, predicting the relationships between nurses’ self-concept, role conception and their work values, received full support from the data.

In contrast, hypotheses 4 to 7 postulating moderating effects of nurses’ personal attributes on their perception of the PEO fit received partial support. Hypothesis 4, predicting the moderating effect of nurses’ collective self-esteem on their perception of the PEO fit, was supported only in the relationships between the overall nurses’ self-concept and the perceived public image, between leadership aptitude of nurses’ self-concept and their public image, and between nurses’ need for organisational support and actual support they received in their organisation. Hypotheses 5 and 6, predicting the moderating effect of the length of clinical experience received no support. Hypothesis 7, proposing the impact of different clinical specialties on the perception of the fit, was sustained only in the relationship between nurses’ need for organisational support and the actual organisational support they perceived to have received. In this relationship, medical/surgical nurses reported a better fit than high dependency care nurses.

As for hypothesis 8, postulating the relationship between the PEO fit and nurses’ perception of their job performance, none of the relationships supported the hypothesis, despite the fact that three different models were examined. Many of the relationships suggested linear models between the personal and environmental factors and nurses’ job performance. But, they did not accept the monotonic model. Five curvilinear relationships were identified. Nevertheless, none of them supported either the hypothesised dome-shaped optimal model or the alternative asymptotic model. One result showed that the caring image misfit contributed to a positive perception of nurses’ job performance. The other relationships raised surprising results, that is that not performing their nursing roles and not receiving many of the environmental supplies led to perception of a positive job performance.

Hypothesis 9 predicted the relationship between the PEO fit and nurses’ turnover intention. Again, many relationships suggested linear models with both/either nurses’ professional and/or the environmental factors contributing to their turnover intention. However, two relationships were found to be curvilinear. The
relationship between the overall role fit and turnover intention indicated that nurses with low role conception and who were not performing many of their roles tended to show strong intention to leave their jobs. Moreover, the results showed that nurses perceiving a role misfit tended to exhibit a stronger turnover intention. The relationship between nurses’ need for task delegation and actual task delegation practice supported the hypothesised bowl-shaped optimal model that the misfit contributed to a greater turnover intention.
CHAPTER 8: DISCUSSION

Introduction

This chapter discusses the results and the thesis conclusions. First, the findings of the quantitative study are discussed in the following order: the relationships between the image of nurses and the PEO fit, factors influencing nurses’ perceptions of PEO relationships, and the effect of the PEO relationship on nurses’ occupational performance. The discussion focuses on the major findings. In addition, part of the discussion is based on the results of a focus group, which was conducted to further explore the meaning of the quantitative findings (see p. 154). A description of the focus group participants is presented in Appendix P and the final stage of the focus group analysis, which mapped the relationships between the themes, is presented in Appendix Q. Second, recommendations to improve nurses’ occupational performance based on the findings of the thesis are presented. Third, the strengths and limitations of the thesis are discussed. Fourth, the areas which need further investigation are identified. Finally, this chapter presents the conclusions of the thesis.

Discussion of the Thesis Findings

The Image of Nurses and the PEO Fit

The thesis postulated that nurses and nursing practice might be influenced by how the public think nursing services should be utilised. Furthermore, nurses and nursing practice might be influenced by the process of professionalisation facilitated by the nursing profession. While nurses are encouraged to develop a professional self-concept, a high role conception and the work values by the nursing professional world, the stereotypical public image of nursing could constrain nursing practice in a way that confirms such stereotypes as nurses as subordinates of physicians. Therefore, it was hypothesised that the images of nurses held by the public would predict nurses’ perceptions of the environmental/occupational characteristics, while nurses’ perception of themselves as professionals would predict their role conception and work values. The underlying assumption of these hypotheses was that the different images of nursing held by the public and nurses would contribute to the PEO misfit. Overall, the results support these hypotheses.
Nurses’ Perception of their Public Image

The results of the quantitative analysis showed that overall nurses perceive themselves significantly more positively than how they believe the public view them. The factor level analysis revealed that, in particular, nurses perceived their self-image as leaders was not congruent with how they thought the public viewed them. On the other hand, nurses viewed their public image as being caring and this was congruent with how they viewed themselves. From the nurses’ viewpoint, these results illustrate the public’s tendency to view nurses as one-dimensional. That is, nurses are viewed as feminine and caring professionals, but, they are not recognised as leaders or professionals who have power. Nurses’ perceptions of public’s lack of recognition toward nursing were also identified in the focus group. The focus group participants described the public had a “fuzzy image” of nursing. Participants generally agreed that the public viewed them as a caring person as follows (Note. The explanations within the square brackets in the focus group excerpts were added by the researcher to clarify the participants’ comments).

Erin: I think if a person probably hasn’t had any communication or interaction with illness of any kind or dealing with nursing, they do believe that they [nurses] are caring, warm, individual[s]….

Emma: I think generally people’s perception may be that nurses are caring people which is nice because I think it’s good that we are caring.

However, participants also expressed that the public does not recognise the diverse roles and specialist knowledge required of nurses. This lack of knowledge contributes to the “fuzzy” image of nursing held by the public. One aspect of this: “a lack of recognition/knowledge about nursing” was described as the public being unaware of nursing roles.

Emma: … they [the public] don’t necessarily have an appreciation for what we actually do for patients…. I just don’t necessarily think people do really know what we do.

Kitty: …it’s not just sort of bed sponging and arranging flowers and all that kind of stuff… I think they [the public] don’t really even consider any of the management that you [nurses] do in a day. And the time management, interacting with patient liaison, the documentation, yes there seems to be, just a very overall view….

Molly: I think a lot of the professional things we do at work people don’t see all the time.
Buresh and Gordon (2000) also agree that the public lacks understanding of what nurses do at work, although the public holds nursing in the highest regard. This lack of understanding of nursing roles may partly be a result of the expansion of nursing roles, which has blurred professional boundaries between nursing and other health care professionals. By surveying and conducting focus groups with a large number of former and current New South Wales nurses in Australia, Buchanan and Considine (2002) identified rising levels of responsibility and a broadening in the range of nursing roles with recent changes in hospital management systems, which have been directed toward cost-containment. Under this management system, nurses need to conduct a range of activities, which were originally the responsibility of other professionals (e.g., physiotherapist, dieticians and cleaners), to cover the cutbacks in those occupational groups (Buchanan & Considine, 2002). Lewis and Urmston (2000) also argue there are blurred professional boundaries between nursing and medicine, and nurses are “expected to develop an ever increasing repertoire of technical expertise in clinical care” (p. 212).

In addition to the changing roles of nursing, the fuzzy image of nursing held by the public also results from invisibility of nurses in the media. Buresh and Gordon (2000) maintain that while physicians utilise the media to report their medical research findings and promote their professional status and roles in society, the nursing profession lacks such a strategy to inform the public about their contribution to health care. Indeed, an extensive review of the US media coverage on health care revealed that nurses were cited only 4% of the time in the over 2000 health related articles from 16 news publications (The Woodhul study on nursing and the media, 1998). Although such an extensive review on the media coverage has not been conducted in Australia, nurses’ invisible practice in the health care system, compared with that of medical practitioners, has also been of concern in Australia (Street, 1995).

The public image of nursing has been challenged by the advancement of current nursing practice, and this has led the public to be confused about what nursing is. Under-representation of nurses in the media also leads to vagueness of the current nursing role. As a consequence of the public’s lack of understanding about the nature of current nursing work, some still seem to be adhering to the old image of nursing. It is apparent that the fictional portrayals of nurses as being doctors’ handmaidens and angelic in the entertainment media (De Vries et al., 1995; Greenwood, 1999; Holems,
1997) are reinforcing the traditional images of nurses. The focus group participants also described another aspect of a lack of recognition/knowledge about nursing came from the public being caught up with the old nursing image, which prevents nursing from achieving full professional status.

Erin: [A nurse is seen as an] individual who doesn’t need to be clever and doesn’t need to earn a lot of remuneration for their work, who doesn’t have to go to university and [the public] don’t understand why nurses do have to study because really what you’re doing is caring for the sick person and that is a basic need…sadly it takes that [time] for the majority of the public to accept us as professionals.

Kitty: [The public overall view’s of the nursing role is] sitting by the bedside, holding the patient’s hand getting a glass of water.

Helen: Nurses have changed a lot over the years… and perhaps the public hasn’t caught up with that change.

Whereas the results suggested that nurses perceive a poor public image of them, there is also the fact that nurses’ perception of their public image is moderately positive as indicated by the mean score of the overall public image of 4.48 (the score ranging from 1 to 6 with 6 indicating a more positive response). Three explanations are possible for interpreting why nurses rated in this manner. The first explanation is based on psychological literature maintaining that individuals with high self-esteem tend to interpret how others view them in a positive manner due to their strong motivation to preserve a positive self-concept (e.g., Cohen, 1959/1968). A positive effect of collective self-esteem on nurses’ perception and/or interpretation of their public image was supported, as indicated by the results of the hypothesis 4 (see table 7.9). Given that nurses in this study rated their collective self-esteem very highly ($M = 5.19$, the score ranging from 1 to 6), their motivation to preserve a professional self-concept could be quite strong. Although nurses perceived their public image to be incongruent with their self-image, this motivation might have led them to perceive/interpret some aspects of their public image positively. The second explanation is based on the ratings nurses gave for the public image of them as being caring. As shown in the descriptive statistics, nurses rated their public image of being caring very high. The high score on caring aptitude ($M = 5.22$), hence, compensated for the lower score of the leadership aptitude ($M = 4.17$), leading to the overall positive public image of nurses. Finally, the moderately high score of the public image may emanate from the actual improvement of the public image of nursing. Nurses have made significant progress toward professionalisation. One of their
achievements includes completion of the transfer of nursing education to tertiary institutions in the Australian context. This educational change, as a result of increased knowledge and skills required by nurses, is recognised by the public, especially by high school students who have been preparing themselves for their future career (Hemsley-Brown & Foskett, 1999; Kohler & Edwards, 1990; Tang et al., 1999). In 2003, the public has also been exposed to the Victorian State Government campaign commercials, which displayed up-to-date scenes of nursing practice. As a result, the public image of nursing could be slowly improving, although their understanding about nursing still needs to be consolidated.

The public image of nurses can also be enhanced through the public’s interaction with nurses. By being cared for by nurses during hospitalisation, the public can learn what nurses do in their daily practice and develop an accurate image (i.e., learned professional image) of nurses/nursing. This view is supported by the focus group participants. The focus group participants described that many patients came to recognise what nurses do in their daily practice through their experience during their hospital stay.

Emma: … if they [the public] haven’t had personal interactions with nurses, in their own experience, then they’re not going to know [about nursing roles]. A relative of mine was recently in hospital and his eyes were just opened. He said, “I’m just astounded at the amount of work that these nurses actually have to do,”

Kitty: … a lot of times when you get family and relatives in [the hospital] they’re really surprised at what you do in a day’s work….

Helen: … it’s not till they talk to you about something or they’ll listen to how your day’s been that they’ll realise all the things you do deal with during a day….

Once the public learns about nursing roles and what nurses do at work, their understanding toward nurses is transformed into respect for nurses’ knowledge.

Molly: If you’re an RDNS [Royal District Nursing Service] nurse going out on the road, I think patients have a lot more respect for you and your knowledge… [if a nurse is seen to be working autonomously in the community].

Helen: Once patients or visitors have some interaction with the RN they get to know them and respect them for their knowledge.

Erin: I do feel that once they [the public] get into the hospital system and they’re in a vulnerable situation they then recognise that nurses do have a lot of knowledge.
As nurses’ interaction with the general public mostly occurs in the health care setting, it is reasonable to assume that nurses’ perception of the positive public image comes from patients. The results suggest that the public’s experience with nursing care serves as a good means to educate the public about nursing roles. However, Buresh and Gordon (2000) also assert that individual experiences with nursing care do not automatically translate into the public’s understanding of nursing. This may be a reason why a “fuzzy” image of nursing still exists in society.

The Impact of the Public Image of Nurses on Nursing Practice

The results of the quantitative study demonstrated that how nurses see their public image is related to how they see their environment and their actual roles. This supports the effect of stereotype. That is, stereotypical beliefs held by people influence their interaction with and expectation of the target group of their stereotype, and this results in constraining the behaviour of the target group members in a way that confirms the (i.e., the perceivers’) stereotype (Ashmore & Del Boca, 1981; Snyder, 1981). Thus, if nurses perceive they are seen as subordinates of doctors, then they also perceive they are expected (or constrained) to act accordingly and treated as such.

The effects of the public’s lack of recognition on nursing practice were observed in the responses of the focus group participants. Inadequate pay and workload were two problems discussed in the focus group. As for the pay, the participants stated;

Erin:  Well it’s interesting if you take for instance, Helen, you know, a Nurse Unit Manager. Now the amount of work she has to do in running her ward, if she were the manager in some organisation I would say she’d be getting double the pay she’s getting here and the thing is that nurses are not recognised for the hats they wear in their roles in nursing…. We are not recognised for the experience we carry; we’re not recognised for the years of experience that we’ve got or for the roles that we’ve got and I really feel there’s a long way to travel with that.

Emma:  I agree. I don’t think that we’re paid well enough for what we actually do. Especially the people who have got more experience than myself.

Helen:  I think there are good points made by the last two speakers…. I think when you compare it to other industries….I guess there would be perhaps more purpose in other industries….
Although the participants did not explicitly link a lack of recognition from the public and inadequate workload, the heavy workload was also mentioned by the participants.

Helen:  Although nurses are encouraged to attend education programmes offered free by the hospital, it’s hard getting them [her staff] there because of the workload and there’re always things for them to finish or whatever….

Emma:  … when I was in my grad year [first clinical year after completion of 3-year undergraduate course] they would often work in teams so even as a grad nurse, but as an RN, you’d be delegated ten patients with an EN [Division 2 nurses, who perform a limited range of tasks under the supervision of Division 1 and 3 nurses] so that was a lot harder….

Erin:  We’re [ANUMs] also often called back to the ward if the NUM is busy. We often have to leave a Division 2… [and] they have to take responsibility in areas that really aren’t their role… Plus you’ve got other stuff to do, paper work and documentation and stuff like that. The shift isn’t long enough.

A heavy workload is a common phenomenon in nursing and has been reported by a study involving 1477 Queensland nurses (Hegney, Plank & Parker, 2003) and a study involving 87 public hospital and ex-nurses in New South Wales (Buchanan & Considine, 2002) in Australia as well. Inadequate numbers of registered nurse contribute to the heavy workload, as has been identified in many hospitals (Aiken et al, 2001).

Nurses’ feelings of being oppressed as a result of poor public image (and poor understandings) of nursing are also documented in other literature. For instance, a New South Wales study revealed that nurses perceived nursing was seen as a female occupation, whose members would leave their job for kids and return to work to provide “supplementary income for the household” (Buchanan & Considine, 2002, p. 30). As a result, nurses perceived they were provided with limited opportunities for career advancement (Buchanan & Considine, 2002). Nursing as a female occupation also appears to induce another dimension of constraint, that is, a poor remuneration for nurses. Nurses’ dissatisfaction with pay is a prevalent problem and documented in many studies (e.g., Buchanan & Considine, 2002; Fung-Kam, 1998; Takase et al., 2001). In addition to the female stereotyping, a lack of recognition toward nursing seems to have constrained nursing practice. In a hospital oriented to cost-containment, resources available to nursing are the first to be cut-off. As a result, nursing role of caring suffers and nurses struggle to find the right balance between a reality controlled
by cost and sustaining their role of care (Turkel, 2001). A lack of recognition could also result in limited hospital support for nurses. In addition, blurred professional boundaries of nursing roles could produce extended role assignment. As a result, nurses suffer from a heavy workload.

As shown in the results of the quantitative study as well as in the focus group, the effect of the public’s lack of understanding of nursing is more prominent with regard to the organisational environment characteristics, but less evident in nurses’ actual roles. As discussed later in this chapter, this may be because of nurses’ professional orientation to provide optimum patient care is interfering with the impact of the negative public image on their practice. In other words, although there may be some external barriers induced by the public’s lack of recognition toward nursing on their role, nurses’ professional orientation (professionalism) does not allow them to withdraw from providing quality patient care. This may explain why there are some non-significant relationships between nurses’ perception of their public image and their perception of actual roles. On the other hand, the results do suggest that there is a significant relationship between the public image of nurses as leaders and nurses’ perception of the actual use of their skills. This may be because if nurses are seen as being intelligent, powerful and professional, they may be allowed to exert more power to influence hospital policies as well as their practice.

While a lack of recognition toward nursing could adversely affect their environment in terms of pay and workload, positive images of nurses such as learned professional image could lead to the advent of professional recognition and hospital support for the professional development of nurses. In other words, the professional image of nurses is not only conveyed to patients and their families, but it can also be translated into the hospital environment. As for the hospital support for the professional development, the focus group participants described it as follows.

Helen: I think one thing is quite good: the study days that we get now. We’re encouraged to use them and take them and we have a choice of what we can attend … The hospital here runs quite a few good study days…I think the hospital’s got a good culture of trying to encourage people to attend things.

Emma: … studying at… Uni, a postgraduate diploma, just being able to do that from work, and being supported financially and being given the time to be able to do that … and having my workplace support me was very positive for me.
The focus group participants also felt there was an “emerging recognition (respect for the nursing profession)” through a changing relationship between doctors and nurses, participation in clinical decision making and receiving respect from other health care teams.

Molly: I don’t think that the space between nurses and doctors is what it used to be…. I think the decision making, I think that’s changed a lot, …because there’s a lot of committees …with the critical guidelines, nurses basically …make up the critical guidelines about hospital manuals so there’s a lot of input from nurses in that area….  

Helen: I think the hospital here is trying to address the points of recognition as one of the issues because I think that they seek to keep professional people…. It’s a good team of people who do respect your views… And I think particularly in the last 5 or 6 years, the hospital… is a very proactive place, …I think that nurses do have a voice here.  

Erin: Everybody’s involved in the decision making about the patient’s care and we have regular meetings every day,….. Everybody’s involved and everybody is allowed to step back and let the other person step in depending on the need of the patient at the time.  

Kitty: … what you’ve got to say is really taken into account and it works throughout the whole team….  

While the focus group participants expressed that they felt recognised by their hospitals, this result seems to contradict the results of the descriptive analysis, which showed a large discrepancy between nurses’ professional needs and their perception of the actual practice in terms of being rewarded with recognition and participation in decision making. Jones and Cheek (2003) interviewed 38 Australian nurses, and also found nurses’ experience of their profession being undervalued by other health professionals, the organisations and society, and their judgement and input not being respected. The discrepancy in the results of the focus group may be attributable to the types of decision making and the characteristics of the focus group participants. The questionnaire used in the quantitative study asked nurses’ perception of their participation in clinical decision making (e.g., discharge plan and initiating referral) as well as hospital policy decision making. As the focus group participants stated, they may have many opportunities to participate in clinical decision making. However, they may have few opportunities to contribute to hospital policy making, which may have lowered the mean score of the actual nursing roles. Indeed, a recent study conducted by Mrayyan (2004) reported that nurses in the US, UK and Canada (N = 317) perceived they had more autonomy in clinical decision making than decision
making on managerial issues. As for the focus group participants, those who provided the above comments had extensive clinical experience. Thus, they may have had more autonomy and recognition from the hospitals compared with the younger nurses represented in the quantitative study. The results of the quantitative study based on 346 participants cannot be compared with the results of the qualitative study based on 6 participants. However, the common theme of both studies is that the public images of nursing (both positive and negative) can be reflected in the hospital environment and nursing practice. While the lack of recognition towards nursing roles could result in undervaluing nurses’ work, the learned professional image could facilitate the provision of a supportive environment where nurses can participate in decision making, receive recognition and engage in professional development.

The results demonstrated that the public’s lack of understanding of multi-dimensional roles of nursing could influence nursing practice in a negative way. But, the results also showed that the one-dimensional image of nursing could be modified by informing the public of an accurate picture of nursing practice. In addition, the results suggested that improving the public image could generate a fostering environment for nurses.

**Nurses’ Self-Concept and its Relationships with their Role Conception and Work Values**

Despite the fact that nurses perceived a lack of public understanding about nursing and the negative influence of this image on nursing practice, the quantitative study suggests that nurses hold a positive self-concept (professional self-concept). The results showed that nurses see themselves as having leadership aptitude such as being professional, logical, responsible and intelligent. They also viewed themselves as being caring, warm and nurturing. On the other hand, nurses rated themselves as powerful lower than other attributes. This may be because they perceived themselves as lacking power to influence organisational decision making. A feeling of powerlessness may also come from a lack of recognition toward nursing from the public.

Nurses’ perception of themselves as being professional was also observed in the results of the focus group. Although, the participants did not expressively state how they saw themselves, the participants often referred to themselves as professional
including: “us as professionals” (by Erin) and “work as a professional” (by Lena), which express a “professional self”. These results support the study assumption that nurses embrace a professional self-concept regardless of how they perceive their public image to be. Maintenance of their positive self-concept could be attributed to their motivation to preserve a positive self. Psychological literature suggests that individuals have a tendency to preserve a self-concept by selectively attending to positive evaluations from others or to the evaluation that is consistent with their self-concept (e.g., Bosson & Swann, 1999; Eisenstadt & Leippe, 1994). This literature suggests nurses may selectively internalise with positive feedback from the public and disregard the negative one as irrelevant in order to maintain their professional self-concept. In addition, development of a professional self-concept is sustained by professional socialisation through formal education and clinical practice (Laing, 1993; Strasen, 1992). During formal education, students develop a professional self-concept inspired by nurse educators. This professional self-concept serves as a frame of reference, which directs nurses’ attention to external information that confirms their self-concept during their nursing career. This could be because individuals strive to maintain an established or existing self-concept to maintain a sense of coherence (Pinel & Swann, 2000; Swann, 1987; Swann & Schroeder, 1995).

The results of the quantitative analysis showed that nurses’ self-concept is positively associated with their role conception and work values. As nurses embraced a professional self-concept, they also embraced high expectations to actualise the roles of their responsibilities and to receive professional rewards, challenge and support from the organisation. Nurses’ professional orientation was also identified in the focus group in the form of maintaining “professional standards” and value “patient-focused practice”. These two categories were often identified within the same paragraph (i.e., within the single response from the participants). This indicates that maintaining a high standard equates to providing good patient care for the participants. The exemplars are as follows.

Emma: I just have my own professional standards and I work according to those… your goal is optimum patient care and good quality care and that’s what you work towards.

Molly: I think it’s just inherent in generalising nurse’s nature that their patients are their number one responsibility and we do work to high standards.
Just as nurses’ self-concept has been fostered through professional socialisation, their role conception and professional values have also been cultivated by professional socialisation through further education and clinical practice. The participants commented on the positive effect of postgraduate study on themselves:

Erin: I went to university and I did my Graduate Diploma in Palliative Care. And I learnt a lot from that. And I found that that actually did change the way I practised and the way I deal with learning.…

Molly: I agree with Erin. It’s quite funny how much I encourage other people to go back to university, that’s if they want to get more experience and move up in their careers. My perception has changed totally [through postgraduate study].

Helen: I completed the course and that was interesting. More modern concepts were out there and I did certainly get advantages from it. It opened my eyes to the way nurses study today and things like that, it was a positive thing.

Nursing education has changed nurses’ role conception and the way they practise. The way they practice as professionals has further fostered their professional orientation. The focus group participants expressed that their professional practice in direct patient care (by Emma) and involvement in clinical decision making (by Erin), has stimulated their professional orientation. This professional orientation has, in turn, driven them into professional practice.

Erin: I think our own personal integrity, I think, drives us to do what we do and enjoy the work that we do.…

Professional orientation has also fostered nurses’ need for professional growth and led them to undertaking further education as a part of professional socialisation.

Emma: … so that [doing a postgraduate diploma] meant for me that was a sort of professional need for me rather than just working as an RN.…

As for the relationships between nurses’ self-concept, role conception and the work values, the regression analysis demonstrated that their role conception and work values were predicted by nurses’ self-concept. This may be because nurses who perceive themselves as having leadership aptitude desire to take such roles as decision making, developing patient care plan, and delegating basic tasks to their subordinates. Nurses, who see themselves as caring, also desire to take roles including providing
patient education and emotional support, and prefer task delegation, which enables them to focus on other important aspects of patient care. In addition, nurses’ perceptions of themselves as being leaders and caring could lead them to seek professional rewards, challenges and organisational support in exchange with their performance. However, the focus group showed that nurses’ self-concept, role conception and values are co-existent. That is, nurses’ professional self-concept may influence their role conception and work values, but what makes them professionals is also their obligation, desire and/or values to provide high standards of care, namely optimum patient care.

Interdependence of values, role expectation and a professional self-concept is supported by other literature. For the relationship between self-concept and role conception, Walsh and Holland (1992) maintain that individuals take up roles in accordance with what they think they are, whereas Argyle (1981) articulates that self-concept emanates from roles played by individuals. As for the relationship between self-concept and values, recent research shows that one’s personal values guide individuals to select a situation wherein they can enact their values. For example, the personal value of benevolence can lead individuals to choose volunteer work from which they can develop an identity (or self-concept) in helping people and reinforce their values (Hitlin, 2003). Many nurses enter the nursing profession because they value caring or want to have satisfaction with caring for others (While & Blackman, 2003). These personal values are fostered through professional socialisation in nursing, and translated into a professional identity/self-concept as a nurse, which further reinforces their values of caring.

While nurses’ value for care emerges with or even before developing professional self-concept, another aspect of their values, which were not articulated in the focus group, may be developed after the establishment of their professional practice. Fagermoen’s study (1997) revealed that nurses embrace two types of values: other-oriented values and self-oriented values. While the other-oriented values are directed to patients such as upholding humanities and attending to patients’ needs, it is the self-oriented values that express nurses’ desire for autonomy, intellectual stimulation and rewards, which coincide with the work values in the present thesis. Although it is not possible to establish a causal relationship from the results of this thesis, it is plausible to assume that, nurses’ work values and particularly the value of
professional rewards could emerge following the development of their professional identity and their skills to provide better patient care. This is because, while some nurses might have chosen the nursing profession because of job security and professional challenges required by nursing, it is less likely that many chose nursing because of recognition, career opportunity and pay, which the nursing profession can offer them. This assumption is based on studies with high school students, which revealed that the students tended not to choose nursing due to their perceptions of limited career advancement, low pay and a lack of power and recognition available to nurses (Hemsley-Brown & Foskett, 1999; Rossiter et al., 1998; Tang et al., 1999). The value of professional rewards, thus, could be developed as a result of nurses perceiving themselves having leadership and caring aptitudes and based on their judgement that their contribution to health care deserves such professional rewards.

The results of the thesis illustrated how nurses viewed themselves as professionals, what they expected their roles to be, and how they desired their professional practice to be reinforced. The results also suggested that nurses’ self-concept, role conception and work values are interdependent. This underpinned the assumption of the PEO model that the person is holistic and his/her mind, body and spirit are inseparable (Law et al., 1996).

**The Areas of the PEO Fit and Misfit**

The quantitative study demonstrated that there was a misfit in the images of nursing held between nurses and society. In particular, the image misfit was prominent in the image of nurses as leaders. As hypothesised, this misfit could have originated from the public being caught up with the traditional (or stereotyped) image of nurses while nurses have preserved their professional self-concept by selectively internalising positive feedback and engaging in professional socialisation. In addition, the results of the focus group suggest that the image misfit also emanates from the public’s lack of understanding and knowledge about nursing practice.

On the other hand, the quantitative study results showed that nurses’ perception of their public image as being caring was congruent with their self-image, suggesting a fit in the caring image. In addition, the focus group results showed that the learned professional image of nurses, which the public acquires through their experience with nursing care, contributes to the image fit. Although a patient’s
personal experience may not be able to change the image of nursing held in society, the concept of learned professional image provides an implication that the image misfit could be reduced by educating the public and increasing their interaction with nurses.

As hypothesised, the quantitative results showed that nurses’ self-concept predicted their role conception and work values. The results also showed that nurses’ perception of their public image predicted how nurses perceived the environmental supplies and how they perceived some dimensions of actual nursing roles. These results imply that the discrepancy in the image of nursing held by nurses and the public could induce the role and value-supply misfit. Indeed, the results of the descriptive statistics revealed that nurses rated their self-concept significantly higher than their perceived public image. They also rated their role conception and work values higher than their perceptions of actual roles and the supplies they received from the environment. In particular, the results showed that nurses’ desire to use their skills and to receive professional rewards were not reinforced in their practice. The latter incompatibility is also evident in the focus group discussion where participants expressed they were paid inadequately for their contribution to health care.

The results of this thesis suggested it is important to improve the public image of nursing. It is also necessary to improve nursing practice in a way that allows nurses to actualise their roles and receive professional rewards in accordance with their contribution to health care. In addition, the results suggested that it is important to encourage professional socialisation wherein nurses can develop a professional self-concept, role conception and work values.  

*The Factors Influencing Nurses’ Perceptions of the PEO Relationships*

The present thesis assumed that individuals constructed their own subjective world in accordance with their needs, such as motivation to preserve a positive self, experience, and culturally prescribed values, which helps to interpret and predict their life events. Therefore, it was hypothesised that although nurses might perceive some degree of PEO misfit, collective self-esteem, the length of clinical experience and the practising clinical area of nurses would moderate their perception of the PEO relationship. However, the results of the thesis provided either partial support for or rejection of the hypotheses. The following section discusses the effect of each of the
above variables in relation to nurses’ perceptions of themselves, their professional needs, and the environment/occupation.

The Effect of Collective Self-Esteem

It was hypothesised that nurses with higher collective self-esteem would enjoy a better PEO fit because they might have stronger motivation to preserve a positive self and perceive their environment/occupation positively than those with lower collective self-esteem. The results of this thesis provided partial support for the effect of collective self-esteem. Collective self-esteem moderated how nurses perceived themselves as professionals and how they viewed the environment and the occupation, as shown in the results of the t-test. Nurses who had higher collective self-esteem (a strong motivation to preserve a positive self) tended to perceive their public image, their actual roles and environmental supplies from the hospitals significantly more positively than those with lower collective self-esteem. Nurses with higher collective self-esteem also embraced a more positive self-concept and higher role conception and work values. Nonetheless, the effect of collective self-esteem on nurses’ perception of the fit was only evident in part of the image fit. Collective self-esteem moderated the relationships between the overall nurses’ self-concept and their public image. In addition, collective self-esteem moderated the relationship between nurses’ self-concept and their public image of nurses as leaders. There are three possible explanations for why collective self-esteem did not moderate other aspects of the PEO relationships.

The first explanation originates in the reliability of the Collective Self-esteem Scale. The reliability of the Collective Self-esteem Scale was found to be low in this study, although it was improved after extracting participants to create higher and lower collective self-esteem groups. This low reliability might have produced inaccurate results for the effect of collective self-esteem on nurses’ perceptions of the PEO fit.

The second explanation is based on the function of self-esteem. Rosenberg (1967/1968) states that individuals with high self-esteem maintain a sense of self-worth by selectively attending to information that provides them with positive feedback. Yet, the function of information selectivity, which influences one’s perception of the environment, is more operative in the unstructured and ambiguous
situation. Although collective self-esteem moderated nurses’ perception of their role conception and the actual roles, the effect of collective self-esteem may be weaker when it comes to moderate the relationship between their role conception and their perception of the actual roles. This is because, unlike the public image of nurses which nurses believe they understand, nurses’ perception of their actual roles comes from what they actually do in their practice. Therefore, nurses’ interpretation of their actual roles is rigid and may be more difficult to be distorted in a way that their actual roles do meet their role conception. This may be the reason why collective self-esteem failed to moderate nurses’ perception of the role fit.

A similar explanation may also be applied to the effect of collective self-esteem on value-supply fit. Nurses have been exposed to constant comparison with physicians in terms of social status, power, recognition and the intellectual requirements of their jobs. Most of the time, this comparison involves nurses measuring their status and power with those of physicians. Because of this comparison, it may be difficult for nurses to manipulate their perceptions of their social status, and rewards, challenges and support they receive from their organisations, as they have a definite target for the comparison. Moreover, rewards like salary schemes and career advancement can be objectively evaluated, thus they do not provide an ambiguous situation in which self-esteem can function to interfere with perception. As has been mentioned, collective self-esteem was found to moderate nurses’ perception of their work values and the environmental supplies. However, this relative rigid situation may limit collective self-esteem to go beyond the effect of influencing nurses’ perception of the fit between their values and their perceptions of the actual environmental supplies.

The third explanation is based on interpretations of collective self-esteem. As stated, Luhtanen and Crocker (1992) identified four aspects of collective self-esteem. These are membership esteem (how good or worthy a person thinks s/he is as a member of her/his social group), private esteem (one’s personal judgements of how good one’s social groups are), public esteem (one’s judgements of how other people evaluate one’s social groups), and importance to identity (the importance of one’s social group memberships to one’s self-concept). To minimise the number of the questions in the questionnaire, the present thesis utilised the membership collective self-esteem subscale, which was deemed to be closely related to the function of the
expected effect, which collective self-esteem has on nurses’ perception of the PEO fit. That is, nurses who saw themselves as worthy members of the nursing profession were assumed to have stronger motivation to manipulate their perception of the PEO fit in order to feel better about themselves. However, because by selecting only one aspect of the collective self-esteem, the present thesis may have failed to demonstrate the full effect of collective self-esteem. Previous studies have demonstrated that different aspects of collective self-esteem had different effects on individuals’ perception of themselves and their environment. For example, individuals who saw themselves as being interdependent tended to develop high collective self-esteem in terms of the importance to identity, whereas individuals who saw themselves as being independent tended to develop higher collective self-esteem in terms of membership, private and public esteem (Sato & Cameron, 1999). In addition, different aspects of collective self-esteem were found to have various effects on individuals’ evaluation of their groups. A study by Aberson and Howanski (2002) showed that individuals with high private collective self-esteem tended to evaluate their low status group favourably, while individuals who belonged to a low status group and had high public esteem did not exhibit such favouritism. On the other hand, when individuals belonged to a high status group, public self-esteem influenced their evaluation of the group in a favourable manner. However, membership esteem reduced their favouritism and the private self-esteem did not have any effect. Although the thesis demonstrated the effect of membership esteem on nurses’ professional orientation (i.e., self-concept, role conception and the work values) as well as their perceptions of the environment/occupation, its effect on nurses’ perception of the PEO fit was limited in certain aspects. This may be because different aspects of the PEO fit could be moderated by the different aspects of collective self-esteem. For example, public esteem may have a stronger impact on nurses’ perception of the fit in terms of professional rewards and organisational support, as public esteem is related to the social evaluation of the nursing profession. On the other hand, identity esteem may have a stronger impact on their perception of the caring image fit and the role fit, as caring for patients and maintaining high standards in care are important values nurses hold in themselves and are a component of their professional identity.

Although the collective self-esteem was found to partially moderate nurses’ perception of the PEO fit, this does not deny the important role of collective self-
Esteem. This is because collective self-esteem appears to have a positive impact on nurses’ perceptions of their environment/occupation as well as their professional orientation.

The Moderating Effect of the Length of Clinical Experience

The literature reviewed in Chapter 3 showed how perpetuation of the stereotypical public image of nurses could constrain nursing practice. The literature also illustrates nurses’ frustration with the lack of professional rewards in terms of recognition, pay, opportunities for participation in decision making and career advancement as a result of the public’s poor understanding of nursing. Therefore, the thesis hypothesised that nurses with long years of clinical experience would learn to adjust their professional orientation to the environment, such as the public image of nurses and organisational rewards available to them, in order to minimise their experience of the PEO misfit. This assumption is congruent with the findings of the previous studies, which showed that experienced nurses embrace a lower self-concept and less desire for decision making and independence than less experienced nurses (Blegen et al., 1993; Joseph, 1985; Takase, 2000). In contrast, it was hypothesised that less experienced nurses would experience the misfit due to the gap between their idealised image of nursing and their actual nursing practice. The results of this thesis rejected the hypotheses. Overall, more experienced nurses reported a higher professional orientation and more positive perceptions of their environment/occupation than less experienced nurses. Nurses’ perceptions of the PEO fit also did not differ between more and less experienced nurses.

The image fit perceived by less experienced nurses was marginally better than the fit perceived by experienced nurses. But, this better fit was characterised by less experienced nurses perceiving themselves and their public image slightly more negatively than those with more experience. The exception was that the former rated the public image of them as being caring higher than their experienced counterparts. These results contradict the assumptions of hypotheses 5 and 6. What the results suggest, instead, is that more experienced nurses tend to perceive themselves and their public image more positively than those with less experience. The positive self-views expressed by more experienced nurses may be a result of professional socialisation in the clinical as well as the academic environment. As has been discussed, professional socialisation through education has fostered nurses’ professional orientation.
Professional socialisation has also changed the way they practice as professionals, which has a positive impact on the development of professional orientations. The literature supports the relationship between positive job experience and the change in employee’s personal aptitudes. A longitudinal study involving 910 adolescent New Zealand workers (from age 18 to 26) showed that individuals who engaged in autonomous practice tended to develop leadership aptitudes, and individuals who had power over organisational resources tended to develop a dominant personality (Roberts, Capsi & Moffitt, 2003). Furthermore, a longitudinal study by Kirchmeyer (2002) demonstrated that socialisation through career advancement had changed MBA holding managers’ \((N = 207)\) perceptions of themselves in such a way that had increased both masculine (e.g., independent and assertive) and feminine (e.g., affectionate and understanding) self-concept in accordance with their roles.

The results of the above studies (Kirchmeyer, 2002; Roberts et al., 2003) suggested that less experienced nurses may have a poorer self- and public image, because they lack opportunities for professional socialisation and practice due to their shorter length of clinical experience. On the other hand, more experienced nurses have had more opportunities for professional socialisation, and thus has developed a more positive self-concept. Experienced nurses also have had more opportunities for skills and career development as a result of professional socialisation. Hence they may be receiving more positive feedback from patients, resulting in the perception of positive public image. Although the results of the thesis may indicate a positive change through clinical experience, quantitative study results also showed no significant difference in their self-concept and their perception of the public image between more and less experienced nurses. As for nurses’ self-concept, a change in nurses’ self-concept may be difficult to observe as one’s self-concept changes over a long period of time (Van der Meulen, 2001). In such a case, grouping nurses with less than and equal to 4 years of experience into one group, and grouping nurses with 13 years and more experience into another does not provide a sufficient time interval to demonstrate a change in self-concept. Alternatively, it may be argued that a rapid development of nurses’ self-concept occurs at the very beginning of their nursing career, for example, in the first few years of their clinical practice or even during a basic education period. Then, their self-concept may become relatively stable over the course of their nursing career. In this case, comparing self-concept of nurses with \(\leq 4\)
years of experience with those with $\geq 13$ years of experience may not differentiate a change in self-concept. With regard to nurses’ perception of their public image, although more experienced nurses rated it more positively than less experienced nurses, they may also think that their experience is not well recognised by society. The public’s lack of recognition for nurses’ experience was also expressed by one of the focus group participants. This may be the reason why the public image of nurses perceived by both groups, is not much different.

Regarding the image fit, the relationship between nurses’ self-concept and their perception of their public image was marginally weaker in the more experienced group compared with that in the less experienced group. This may be because the self-concept of the more experienced nurses has become stable or improved only at a very slow rate after having established their professional identity over a long period of professional socialisation and practice. Therefore, their self-concept may be less affected by how others view them. On the other hand, less experienced nurses have some more space to improve their self-concept. They may also utilise positive aspects of their public image to foster their professional orientation. This may have resulted in a stronger relationship between the self-concept of less experienced nurses and their perception of the public image.

With reference to the role fit, the results suggested that more experienced nurses perceive a slightly better fit than less experienced nurses as opposed to the image fit. This better fit is characterised by experienced nurses embracing a higher role expectation and perceiving their actual role more favourably than their less experienced counterparts, which rejects the hypotheses. Once again, a positive effect of professional socialisation may be operative. More opportunities for professional socialisation (such as a further education) seemed to have enhanced experienced nurses’ role conception. In addition, experienced nurses are likely to have more power in initiating referrals, clinical decision making, and task delegation due to their accumulated experience and knowledge than less experienced nurses, although they may still perceive some degree of the role misfit. The positive effects of experience on nurses’ role conception and their perception of the actual roles are also seen in the results of a recent study. In a survey of 774 US nurses, Wynd (2003) reported that experienced nurses tended to have more autonomy in their practice and showed a stronger orientation to their nursing service. The positive effect of experience on the
perception of the role fit is also evident in a longitudinal study conducted by Feji, van
der Velde, Taris & Taris (1999), although the study did not specifically target nurses.
The study showed that job experience had increased the fit between employees’
vocational interests (e.g., required skills and competency) and their actual job content
\(N = 1257\).

As for the value-supply fit, more and less experienced nurses’ work values and
their perceptions of the environmental supplies were almost identical, although the
former group rated them marginally higher. There was also no difference in their
perception of the fit between these groups. These results, again, rejected the
hypotheses, despite previous studies suggesting that the value adjustment of
employees occur during the course of their employment. For example, a longitudinal
study conducted by Johnson (2001a, 2001b) demonstrated that the reward structure
available to employees (the sample was the US employees in various occupations)
changed their work values in a way that made rewards less available had reduced
employees’ values to obtain such rewards or made their values shift to more available
rewards \(N = 2373\). Cable and Parsons (2001) also demonstrated that the shift of new
employees’ work values to their organisational values occurred after 18 months of
organisational socialisation. These studies suggest that adjusting one’s values to those
of the organisation leads to experience of a greater value-supply fit. However, the
results of the present thesis did not provide such a conclusion. It may be considered
that nurses’ adjustment to the organisation occurs at very beginning of their career
based on Cable and Parsons’ study. Thus, grouping nurses with less than and equal to
4 years of experience did not demonstrate the value-supply misfit as much as newly
employed nurses might perceive. While there could be minor adjustments of nurses’
work values to those of the organisation, it is unlikely that nurses adjust all their work
values to the perceived environmental supplies. This is because the thesis findings
suggest that experience has a positive effect on the development of nurses’
professional orientation and their perception of the environment/occupation. The
results, which are explored later in this chapter (see the section under the heading of
“The Effect of the PEO Relationships on Nurses’ Job Performance”), also contradict
such an assumption. Therefore, a possible interpretation is that the development of
nurses’ work values takes place over a long period of time, just as nurses’ self-concept
changes over a long period of time. The amount of environmental supplies offered to
nurses also increase at a slow pace. Thus, these slow changes may have resulted in both more and less experienced nurses embracing the same work values and perceiving the same amount of the environmental supplies. The assumption that the environmental supplies slowly increase appears to reflect nurses’ frustration with a lack of autonomy, pay and recognition in accordance with their experience.

The Moderating Effect of Clinical Culture

The thesis hypothesised that nurses in different clinical areas would develop different types of professional orientation, and their orientation would guide their perception of the environment. Hence, it was hypothesised that nurses in different clinical areas would experience different degree of PEO fit. The results of the thesis partially supported this hypothesis.

The results of the t-test showed that the high dependency care nurses have higher expectations of their roles, professional rewards and challenges than medical/surgical nurses, while medical/surgical nurses rated the rest of the variables higher than their high dependency care counterparts. However, these differences were not statistically significant except for their perceptions of the overall actual role and actual task delegation practice. High dependency nurses rated their actual task delegation practice significantly lower than their medical/surgical counterparts. Less task delegation practice in high dependency care units is understandable since only registered nurses, most of whom have critical care qualifications, can work in high dependency areas, and there are few subordinates (e.g., Division 2 nurses) for them to delegate their tasks. Low scores in the actual task delegation practice of high dependency care nurses lowered their overall actual role scores. As a result, this yielded another significant difference in the perception of the actual roles between high dependency care and medical/surgical nurses.

As for the other comparisons, the present thesis demonstrated incongruence with the findings of the previous studies, which showed that nurses in various clinical areas did have different needs and perceived their environment differently. For example, a US study conducted by Balevre (2001) illustrated that critical care nurses tended to demand more entitlements than other nurses. As for the perception of the environment, a UK study conducted by Adams and Bond (1997) showed that medical nurses perceived they had a greater influence on ward management than
orthopaedic nurses. Moreover, the study showed that the orthopaedic and surgical nurses perceived there were more hierarchical attitudes from the nurse managers and medical staff than nurses in other clinical areas. A study by Tummer, van Merode and Landeweerd (2002) reported that the Dutch ICU nurses perceived they had more autonomy over decision making than non-ICU nurses, while a US study by Schutzenhofer and Musser (1994) illustrated that ICU nurses perceived significantly less autonomy than the others. The present thesis was unable to demonstrate the differences between medical/surgical and high dependency care nurses’ professional orientation and their perceptions of the environment/occupation. This can be explained by two reasons. The first reason is attributable to the way the clinical groups were created. The present thesis categorised nurses arising from large available areas as follows: medical and surgical nurses into one group, and ICU, emergency and cardiology nurses into another group. Moreover, the thesis did not include nurses in the other clinical areas in comparison due to their small sample sizes, which could have caused an imbalance in representation compared with those of medical/surgical and high dependency care nurses. This broad grouping and excluding other clinical areas for comparison may have led to inadequate differentiation of nurses’ professional orientation and their perception of the environment/occupation by clinical area. The second reason originates in the instruments used to measure nurses’ professional orientation and their perception of the environment/occupation. As shown in the factor analysis, the first factor in all the instruments comprises many items. For example, the first factor of the instrument, which measured nurses’ expectation and perception of their use of skills, encompassed a decision making role (such as participation in hospital policy decision making and initiating referral) as well as a caring role (such as providing emotional support to patients). This broad definition of the factor may have led to another inadequate differentiation of how nurses in each clinical area embraced different professional orientation and how they perceived their actual roles differently.

With reference to nurses’ perception of the PEO fit, the results suggested that both medical/surgical and high dependency care nurses tended to perceive a similar degree of PEO fit. In other words, the hypothesis that nurses in different clinical areas perceive different degree of fit was rejected in most of the relationships tested in this thesis. The same two reasons indicated above could be applied to the explanation of
these results. In addition, there are two more possible explanations for them. The first explanation is based on the Theory of Personality Types and Work Environments (Holland, 1985; Walsh & Holland, 1992). According to this theory, individuals choose or are attracted to a certain occupation because they think their abilities and occupational interests match their needs and skills. The theory also articulates that only those who perceive the compatibility between their needs/skills and the characteristics of their chosen occupation remain in their jobs. Applying this to the nursing context, it is assumed that nurses choose and remain in their clinical areas because they feel their needs are more likely to be fulfilled in their chosen area than in the others. This may be the reason why both groups of nurses rated similarly the PEO fit. The second explanation is based on the results of Vanderberghe’s study (1997). Vanderberghe studied how health care professionals in different clinical areas and in different organisations perceived their unit/organisational culture. The results showed that although some aspects of the institutional culture were perceived differently between the clinical areas, more differences were found when the comparison was made at the organisational level. Since organisational culture is internalised in each of their units, the differences in nurses’ perception of the PEO fit may be clearer at the organisational level rather than at the clinical area.

Whereas most aspects of the PEO fit perceived by medical/surgical and high dependency care nurses did not differ significantly, there was one aspect of the fit that displayed the difference. The results showed that high dependency care nurses perceived a significantly poorer fit between their need for organisational support and the actual support received from the organisation than the medical/surgical nurses. However, the poor fit perceived by high dependency care nurses was attributable to these nurses receiving a relatively stable amount of organisational support, irrespective of their needs. One of the reasons for this weak value-supply fit perceived by high dependency care nurses could be explained by the characteristics of their work environment. High dependency care units accept many emergency admissions and critically ill patients. Moreover, nurses working in an ICU and emergency department have to care for patients who are treated with physicians in diverse specialties. Indeed, a study by Tummer et al. (2002) showed that ICU nurses in the Netherlands felt significantly more complexity in their roles and more uncertainty about the future clinical events than non-ICU nurses did. This complex work situation
may reduce the opportunities for high dependency care nurses to establish regular routines in their practice as they desire. On the other hand, this complex work environment may have resulted in increasing support among nursing staff to cope with complex demands for patient care. It may have also increased staff support from nurse unit managers. A study by Ohman (2000) showed that nurse unit managers in ICU tended to view themselves exhibiting transformational leadership, which provides their staff with inspiration, opportunities for creativeness and individual support for professional growth (Bass, 1998), rather than displaying transactional leadership in which the unit managers merely give their staff directions to follow and provide contingent rewards for their performance. As a result, high dependency care nurses may perceive a stable amount of support from their senior staff irrespective of how much support they desire.

Another reason for the weak relationship between high dependency nurses’ need for organisational support and actual support they receive may be explained by the nursing shortage in critical nursing care. Australia has been experiencing a national nursing shortage in the areas of accident/emergency, critical/intensive, and cardiothoracic care (Department of Employment and Workplace Retentions, 2004). This nursing shortage may have increased the sense of job security of high dependency care nurses regardless of how strongly they desire for the job security.

The results of hypotheses 4 to 7 partially supported the effect of individual characteristics of nurses on their perception of the PEO fit. The results showed that nurses’ perception of the PEO fit can be different in accordance with their level of collective self-esteem and by their personal affiliation with clinical areas. The results also showed that high collective self-esteem has a positive impact on the development of nurses’ professional orientation and their perception of the environment/occupation. In addition, the results showed that length of clinical experience has a marginal positive effect on nurses’ perceptions of their environment/occupation and their professional orientation. As the positive effect of the length of clinical experience may be linked to a positive effect of professional socialisation, it is important to encourage professional socialisation in nursing. It is also important to improve the public image of nurses. This is because if nurses are seen as professionals, they may be able to receive more organisational support, which facilitates nurses’ professional socialisation in further education.
The Effect of the PEO Relationships on Nurses’ Occupational Performance

The thesis hypothesised that the PEO fit would enhance nurses’ job performance and their intention to stay in the job, while the misfit would adversely affect their occupational performance. However, most of the results rejected the hypotheses. The following section will discuss the effect of the PEO relationships on nurses’ job performance and their turnover intention separately.

The Effect of the PEO Relationships on Nurses’ Job Performance

Overall, hypothesis 8 postulating the impact of the PEO fit on nurses’ job performance was rejected. The results showed that nurses’ perception of their job performance is related to both/either their professional orientation and/or the environmental/occupational factors. Yet, none of the relationships showed the hypothesised dome-shaped optimal model. One reason why the results did not support the hypothesis might be that nurses’ job performance was measured by nurses’ self-appraisal, and their self-appraisal might be different from a supervisor-rating as often used in organisational and psychological studies. Yet, whether or not self-rating is compatible with supervisor’s rating is debatable. A study by Brutus, Fleenor and McCauley (1999) showed that self-appraisal ratings of 1014 managers (non-specific to nursing) tended to be higher than the ratings from their peers, subordinates and superiors, and its correlations with the other ratings were weak ($r = .19–.28$). In nursing, a study by Meretoja and Leino-Kilpi (2003) reported that managers’ assessment of their staff nurses’ competencies tended to be higher than staff nurses’ self-assessment ($N = 81$), and the correlations between these two assessments were weak ($r = .10–.37$). In contrast, Facteau and Craig (2001) concluded that self-appraisal ratings of 1883 managers (non-specific to nursing) did not differ significantly from the ratings by their peers, subordinates and superiors after carefully examining and adjusting the constructs of the performance scale rated by self and other groups of appraisers. Whether self-appraisal of nurses’ job performance may or may not be converged with the ratings of others cannot be determined due to the lack of stringent studies. However, the purpose of the thesis was to explore the impact of nursing image on nursing practice from the nurses’ point of view. Thus, using nurses’ self-appraisal of their job performance meets its purpose. Nevertheless, a cautious interpretation of the subsequent discussion is necessary until other studies establish
the compatibility between nurses’ self-appraisal of their job performance and the appraisal from others.

With reference to the relationship between the image fit and nurses’ job performance, the results rejected the hypothesis that both the perceived public image and nurses’ self-concept would interact with each other to influence nurses’ job performance, and the relationship between them would be curvilinear as illustrated by the dome-shaped optimal model. In most of the relationships, the results suggested that nurses’ self-concept is the sole predictor of their job performance, and the relationship between them is positive and linear. The effect of self-concept on one’s performance is also supported in other studies. For example, a longitudinal study conducted by Marsh, Hau and Kong (2002) demonstrated that the academic self-concept of 7802 high school students influenced their academic performance in the subsequent years. In turn, their academic performance influenced their academic self-concept in the following year.

While the results showed a positive impact of nurses’ self-concept on their perception of the job performance, the results also showed that the perceived public image does not have any effect in most of the relationships tested at the factor level. This finding negates the results of other studies, which demonstrated that stereotypical beliefs held by others had influenced the behaviour of the stereotyped (Snyder, 1981). The reason why the public image did not affect nurses’ job performance has been well described by one of the focus group participants.

Emma: I don’t think on a day-to-day basis about what the public out there think of me. I just have my own professional standards and I work according to those.

As Emma described, what drives nurses to maintain their job performance is their professional orientation (or professionalism). Nurses value high standard care and patient-focused practice, and these values are internalised with how they see themselves as nurses (self-concept). Consequently, nurses strive to maintain their values and self-concept in their practice regardless of how they believe the public views them. As for nurses’ job performance, the thesis suggests the importance of cultivating a professional self-concept in order for nurses to provide the best possible patient care.
Whereas most of the relationships between the image of nursing and job performance were explained by a linear relationship with nurses’ self-concept, there was one relationship, which showed a different relationship to the others. The results showed that the nurses’ self-concept and their perception of the public image of them as being caring interact with one another to predict nurses’ evaluation of their organisational criteria-based job performance. Moreover, the relationship between them was curvilinear. Nonetheless, this curvilinear relationship was found to more closely resemble the bowl-shaped model as opposed to the hypothesised dome-shaped model. The descriptive statistics showed that nurses tended to rate both their self-concept and the public image of them as being caring very positively. The graphical analysis (see Figure 7.4) showed that among those who perceive both themselves and their public image positively, nurses who perceive their public image more positively than their self-image tended to evaluate their criteria-based job performance slightly more negatively than those, who see their self-concept more positively than their public image. This phenomenon may be explained by the pressure nurses feel about the public’s high expectation of nursing as being caring. Literature suggests that caring is the most important aspect of nursing for nurses, the public and the organisations. A study by Watson, Deary and Amandah (1999) showed that after 12 months of undertaking a nursing course, caring became synonymous with nursing for 124 Scotland nursing students. March and McPherson (1996) also reported that that caring was rated as one of the most important attributes of a good nurse by UK nursing students \(n = 266\) and qualified nurses \(n = 262\). The public also sees caring as the primary and highly regarded role of nursing (Hemsley-Brown & Foskett, 1999; Rossiter et al. 1998; Tang et al. 1999). As for the organisation, Turkel (2001) maintains that the nursing role of caring suffers because of a cost-containment management, as caring involves unobservable energy and its outcome is often undetected (Davies, 1995). However, hospitals also use quality nursing care in their promotional materials to attract many patients (Powres, 2001). Indeed, one of the participating hospitals in this study used the results of a recent patient satisfaction survey, which indicated patients’ satisfaction with their nurses being courteous and compassionate, in their quality of care report (2002/03 quality of care annual report, 2003). Thus, nurses’ perception of themselves not meeting the public’s expectation may have led nurses to evaluate their job performance negatively. A high social expectation of nursing care may also have caused stress/pressure on nurses that
resulted in actual low performance. This pressure may be characterised as the opposite of the stereotype threat, reviewed in Chapter 3. The stereotype threat is associated with fear that individuals’ performances may confirm the negative stereotypical beliefs about their group (Steele, 1997). For example, if nurses are seen as being unintelligent by society, nurses may feel pressure that they should not act in a way that reinforces such a stereotype. This pressure also creates worries (or even fears) that their behaviour may happen to reinforce such a negative image. Instead of being pressured not to reinforce a negative image of nursing, nurses in this study might have felt pressure to confirm the well regarded public image of being caring and what their hospitals advertise for in regard to nursing care. The pressure to be even more caring than they already are might have created stress and resulted in reducing their job performance.

While nurses tended to positively rate their self-concept and the public image of them as “being caring”, there is also the fact that a small portion of nurses rated one of these factors negatively. The results showed that when nurses have a positive self-concept, but perceive their public image negatively, they tend to evaluate their job performance positively. The PEO model maintains that when the person experiences the misfit, they may reduce their job performance or be motivated to change either themselves or the environment to avoid the misfit. A previous study demonstrated that employees’ perception of the misfit contributes to decreased job performance (e.g., Fritzsche et al. (1999), see Chapter 3 for the review). Johnson’s study (2001a, 2001b) also showed that employees change their professional needs in accordance with the environmental characteristics. In contrast to these results, however, the results of the thesis suggested that nurses are motivated to change their public image by displaying excellent performance rather than reducing their performance or changing their self-concept. This is because being caring is an essential part of nursing, thus, being recognised by the public for their caring aptitude is important for them. Individuals’ efforts to achieve their goals by exhibiting better performance are also supported in other literature. For example, the Goal-Setting Theory and Control Theory maintain that discrepancy between goals individuals aim at and what they actually achieve creates self-correcting motivation that subsequently enhances their job performance (Donovan, 2002; Kernan & Lord, 1990). As reviewed in Chapter 3, the study on the Self-Discrepancy Theory also showed that when individuals perceive a discrepancy
between what they actually are and what they ought to be, they experience agitation-related emotions, which increases their performance to achieve their goals (Higgins et al., 1986). It should be noted that the hypothesis of the thesis was partly derived from another finding of the Higgins et al.’s study, which showed individuals' tendency to reduce their job performance when they experience dejection-related emotions as a result of a discrepancy between the actual and ideal self. However, the result of this thesis seems to illustrate that nurses experienced agitation-related emotions rather than dejection feelings, when they perceived a caring image misfit. This may be because, as caring is the central aspect of nursing, nurses may think that being seen as caring professionals by the public is not only ideal, but it is essential.

Nurses’ motivation to change the public image is further precipitated by their professional orientation. Literature suggests that the motivation to change their environment is seen more strongly in employees who tend to be hardworking, self-disciplined and motivated. A longitudinal study by Simmering, Colquitt, Noe and Porter (2003) exhibited that conscientious people (hardworking, self-disciplined) were more motivated to engage in developmental activities to change organisational evaluation of them, when they perceived a misfit between their need for autonomy and actual autonomy provided at work ($N = 83$ managers working in different industries). An experimental study by Tatum and Nebeker (1995) also showed that highly motivated people are more sensitive to negative feedback on their job performance, thus they tend to improve their performance in order to change the negative feedback ($N = 48$). The study of Tatum and Nebeker also suggested that highly motivated people increase their performance, when there is an external barrier to their work. Considering that nurses see themselves as professionals and value a high standard of care, it is likely that nurses’ professional orientation motivates them to improve their public image by displaying even better performance. The focus group participants supported this observation as follows.

Emma: Perhaps if there is a perception… that you get from a patient that they don’t care too much about what we’re doing, it probably only stimulates me to work harder to get people better.

Helen: I sort of agree with that… If people don’t have the right idea, I like to casually make them more aware of things like the study we do and the benchmarks you look up to and so on and I hate to think that people out there have got a really poor idea of what you do. But I think over the years I’ve had educated friends and even some people in the allied health professions or the medical profession [who have poor understanding of nursing roles]. It’s not until they talk to you… or
they’ll listen to how your day’s been… they’ll realise all the things you do deal with during a day.

Emma: [If the public doesn’t know much about nursing], that sort of stimulates me to demonstrate (laugh) the wealth of (laugh) things that we actually do for them.

While nurses’ performance may lead to improvement in their public image, the literature also suggests that individuals’ effort to change negative feedback from others functions to restore their self-concept (Swann & Hills, 1982, see Chapter 3 for the detail). Thus, nurses’ efforts to display excellent nursing care are important not only in changing their public image, but also to help maintain their professional self-concept.

A tendency to positively evaluate criteria-based job performance was also seen in a small group of nurses, who rated their caring aptitude negatively, but rated their public image positively. For these nurses, it appears that receiving positive feedback from the public does not create pressure, which may reduce their job performance. On the contrary, such positive feedback appears to have offset their negative self-view and provided confidence to evaluate that their job performance had met the organisational requirements. Alternatively, it could be interpreted that the image misfit motivated them to perform well in order to keep up with the positive public image of them as well as to improve their self-concept. Either way, the hypothesis that the image misfit would decrease nurses’ job performance was rejected.

The results of the analysis investigating the effects of the overall role and value-supply fit on the job performance are discussed together, as they share similar characteristics. The results showed that neither of the relationships supports the hypothesised optimal model. However, the results demonstrated that the personal and environmental/occupational variables contributed individually to explaining the nurses’ job performance. Nurses’ overall role conception and work values were positively and linearly related to their perception of their job performance. This positive relationship is also supported by the results of a study conducted by Verplanken and Holland (2002). Their study showed that when individuals are aware of their values and when those values are central to themselves, the values guide their behaviour in a way in which their behaviour reinforces those values. As discussed previously, nurses value high standard care and patient-focused practice by utilising their skills and knowledge. Nurses also cherish such work values as recognition,
autonomy and professional challenges, which reinforce their professional values. Therefore, it is plausible to consider that their role conception and work values lead to better job performance.

While nurses’ role conception and work values showed linear relationships with their job performance, nurses’ perceptions of their overall actual roles and the environmental supplies illustrated an upward curvilinear relationship with their performance. In other words, when nurses perceived themselves engaging in either many or few roles in practice, they tended to evaluate their job performance positively. When nurses perceived themselves receiving many or few environmental supplies, they also tended to perceive their job performance positively. As for the effect of the overall actual roles, this upward curvilinear relationship can be the reflection of the same upward curvilinear relationship shown between their perception of actual task delegation practice and their perception of their job performance. This is because the effect of nurses’ perception of the actual skill utilisation only had a linear relationship with their job performance. Perhaps, task delegation opportunities may improve nurses’ job performance in a way that nurses can direct their energy to other important tasks they have to perform. Little opportunity for task delegation may also lead to a positive evaluation of their job performance, as nurses may feel that they engage in more tasks than it is necessary.

As to the relationship between nurses’ job performance and the overall environmental supplies, the results suggested that when nurses perceive they are professionally rewarded, challenged and supported, they tend to evaluate their job performance positively. This may be because such positive environmental attributes indicate values, the organisation places on nurses’ performance. Thus, these positive environmental supplies function as incentives for nurses to perform better. In contrast, the results also illustrated nurses’ tendency to rate their job performance positively, when nurses perceived they were poorly rewarded, challenged and supported by the organisation. This relationship may illustrate nurses’ motivation to change their environment in accordance with their professional needs. Unlike the relationship between the caring image fit and job performance, there was no interacting effect between nurses’ overall work values and their perception of the overall environmental supplies on their job performance. Yet, given that nurses embraced relatively high work values as shown in the results of the descriptive statistics, it is possible to
assume that some nurses perceived low environmental supplies compared with their high work values. This value-supply misfit motivated them to perform better in order to change the organisational evaluation of their values, rather than reducing their job performance or adjusting their work values to the environment. At factor level analysis, however, the upward curvilinear relationships were not observed. In some relationships, there was no impact of the environmental supplies on nurses’ job performance. Thus, it appears that nurses tend to exhibit high performance only when their experience of receiving insufficient environmental supplies is aggregated.

The mild upward curvilinear relationships between nurses’ perceptions of their overall actual roles, the overall environmental supplies and job performance also suggest that nurses’ job performance is relatively sustained irrespective of how they perceive their occupation and environment to be. Maintenance of the performance was also indicated in the mean score of the task performance scale ($M = 4.79$ and $91\%$ of the scores fell between $4.00$ and $6.00$). This may be because nurses’ professional orientation does not allow them to reduce their job performance. The focus group participants explained these findings, specifically in relation to the environment supplies, as follows.

Emma: I don’t think any of us would say, “Oh well, we’re paid poorly so we’re just going to give a poor effort,” so I don’t think there’s a relationship between level of pay and care.

Kitty: [In response to Emma] I was just thinking the same thing. I think, overall your job performance doesn’t change [even though] you’re in an environment where you’re not getting support….

Erin: … if it [the support which the hospital provides nurses with] is low, the work is still done because of our integrity and our morale and because of what drives us to be nurses. So I don't really think the actual practice [job performance] would be affected… certainly they would never change the way they [nurses] actually approach the patient or treat them.

As commented by focus group participants, it is the culture and the nature of nursing professionals that drive them to maintain their job performance to provide better patient care. It is also nurses’ professional orientation that motivates them to perform better in order to change their evaluation from the public and the organisations they work within. Although the hypothesis itself was not supported by the study, the results of the present thesis raised two important issues. First, the effect of the PEO fit on job performance cannot be explained by simple causal relationships such as a misfit induces low job performance. This is because individuals also make
the behavioural choice of either adjusting themselves to the environment or changing their environment in a way that corresponds to their needs in order to achieve the fit (Law et al., 1996). Moreover, their behavioural choice can be determined by each individual’s personality (Simmering et al., 2003) and the level of motivation to exhibit a good performance (Tatum & Nebeker, 1995). These factors make it difficult to predict how individuals respond to their environment in relation to their needs.

Second, there are cultural/social factors that could interfere with employees’ response to the PEO relationships. The effect of the PEO fit on job performance has been investigated on employees with many types of occupations. However, there is a paucity of studies involving professionals who were more concerned with providing better care for others than what they could receive for their job performance. There are also few studies involving professionals who were registered with a statutory body that regulated the performance of its members, like nursing professionals. The thesis demonstrated how nurses’ professional orientation (or culturally prescribed values and practice) interfered with their behavioural response to the environment. A study by Nyambegera, Daniels and Sparrow (2001) also showed how employees’ responses to the PEO relationships could differ by social contexts, in which employees perform their tasks. The results of this thesis have featured complex relationships between nurses’ professional orientation, the characteristics of the environment and occupation, and nurses’ job performance. The results of the thesis also explained how employees’ job performance could be affected by other factors such as individual characteristics and professional context.

**The Effect of the PEO Relationships on Nurses’ Turnover Intention**

Hypothesis 9 postulating the impact of the PEO fit on nurses’ turnover intention was partially supported. However, except for the relationships with the overall nursing roles and the task delegation practice, the results showed that nurses’ turnover intention is negatively and linearly related to both/either nurses’ professional orientation and/or their perception of the environment/occupation. An interesting finding of hypothesis 9 is that the effect of nurses’ perception of the environment/occupation on their turnover intention is different from that on the job performance. In the results of hypothesis 8, for example, nurses’ perception of the public image did not show any impact on their job performance. On the other hand, the results of hypothesis 9 demonstrated that both nurses’ self-concept and the
perceived public image contributed to predicting nurses’ turnover intention. In another instance, the results of hypothesis 8 showed that the impact of the environmental supplies on nurses’ job performance is mild (or even absent in some relationships at factor-level analysis). In contrast, the results of hypothesis 9 demonstrated that it was the negative perception of the environmental supplies that mostly contributed to nurses’ turnover intention. These results are consistent with the literature, which suggests that negative environmental factors such as lack of recognition and low pay are reasons for nursing turnover (Joshua-Amadi, 2002), nurses considering leaving their organisation and the profession (Best Practice Australia, 2003) and not currently working as nurses (Nurse Recruitment and Retention Committee, 2001). The focus group participants also commented that negative environmental characteristics would lead to job dissatisfaction and their intention to quit.

Emma: …perhaps for me if I was feeling all of those things you’ve just suggested: low pay, low support, low everything, I probably wouldn’t stay (laugh). Think I quit now.

Kitty: I think more [effect on] job satisfaction if you’re in an environment…where…you’re not getting the support…you’re not utilised for your skills and you’re just not being praised or you’re not being recognised, overall the job satisfaction [is decreased], not performance.

Molly: … yes, if you do have an awful workplace, you may eventually leave.

Helen: I’d like to say I agree with that but while we do a good job I think if morale is really low in the ward where you’re working, or there’s some major problem, it will eventually affect all the staff and people will start leaving….

Erin: I think maybe on a certain personal level people might leave or they might go and look for other jobs or they might go for another position in another ward or something [if they don’t receive organisational support].

The fact that different variables contribute differently to different aspects of occupational performance is noteworthy, as it suggests that investigating the sole effect of either the personal or environmental/occupational factors to explain nurses’ occupational performance is insufficient. Although the results did not support the hypothesised effect of the PEO fit, other studies also demonstrated that different aspects of the PEO fit were related to different aspects of occupational performance (Hambleton, Kalliath & Taylor, 2000; Lauver & Kristof-Brown, 2001; Verplanken & Holland, 2002).
Another interesting finding is while the negative perceptions of the public image, actual roles and the environmental supplies were related to increased job performance in some relationships, these factors contributed to increased turnover intention. It appears that motivation to change the environment could boost nurses’ job performance in some instances. But at the same time, it could lead to turnover intention, as changing the environment is physically and psychologically taxing. Moreover, if the change process is prolonged, it is likely to cause more stress and job dissatisfaction within nurses. A previously mentioned study by Tatum and Nebeker (1995) also suggests that while an external barrier can increase job performance of motivated persons, it can also cause frustration, dissatisfaction and stress. The results of this thesis suggest that it is crucial to improve the public image of nurses and nursing environment/occupation so as to retain currently practising nurses.

Whereas many personal and environmental/occupational variables showed linear relationships with nurses’ turnover intention, their perceptions and expectations of their overall nursing roles and task delegation practice displayed curvilinear relationships. As for the relationship with overall role fit, the results showed that when nurses have low role conception and perceive themselves engaging in fewer roles, their turnover intention progressively increases. The results also showed that the misfit between their overall role conception and the perception of the actual roles predicts a strong effect on their turnover intention. This relationship may be conceivable, as nursing care is the fundamental component of their profession. Therefore, not engaging in their roles they expect to fulfil may cause undue frustration for nurses, resulting in turnover intention.

As for the relationship between turnover intention and the fit in task delegation practice, the results supported the hypothesised bowl-shaped optimal model. The results showed that when nurses perceive the fit, they express low turnover intention. On the other hand, when nurses perceived the misfit, their turnover intention gradually increased. Turnover intention resulting from a misfit between a low need for task delegation and high amount of task delegation practice may be caused by boredom. This is because too much task delegation leads to a smaller workload and less contact with patients than nurses desire. A high amount of task delegation also causes stress to nurses, as they are also accountable for care provided by their subordinates. In addition, some task delegation may induce guilt-laden stress when
delegated tasks involve those which are not primal responsibility of their subordinates. The focus group participants commented on the survey findings as follows.

Emma: … as an RN, you’d be delegated ten patients with an EN [Division 2 nurses] so that was a lot harder actually as you’re responsible for medications and really for all the ten patients we had the EN to delegate tasks to, but to me, that actually made the job harder, it didn’t improve my satisfaction, it made it harder because you’re actually still responsible.

Erin: We often have to leave a Division 2 to go to a meeting, it kind of creates a bit of stress because they kind of feel that they have to take responsibility in areas that really aren’t their role…they’re so experienced and so senior [years of service] they like to try and we’re sort of trying to support them but we find that can be quite stressful.

Although the survey did not include items on task delegation to student nurses, the participants also commented that delegating tasks to the students sometimes created stress.

Helen: Generally speaking they [staff nurses] said… they enjoyed it [having student nurses] but they said it [delegating tasks to the students] did slow things down tremendously, and it does, makes it a bit tough, it’s difficult.

Erin: I think we enjoyed having students too. They do slow you down a bit.

On the other hand, the results also showed that a high task delegation need and low practice contributes to increased turnover intention of nurses. As outlined earlier (see the section under the heading of “The Impact of the Public Image of Nurses on Nursing Practice”), nurses experience heavy workloads. Thus, inability to delegate some of their basic tasks to others may be causing frustration and stress to nurses. In addition to stress caused by heavy workloads, nurses may experience another burden relating to the quality of care they provide. The short-staffing experienced by many hospitals (Aiken et al., 2001) prevents effective task delegation. Limited opportunities to delegate basic tasks to others indicate less time for nurses to conduct more important tasks, such as monitoring critically ill patients. Studies showed that inadequate numbers of registered nurse staff lead to high patient mortality due to decreased quality of nursing care (Aiken, Clarke & Sloane, 2001; Aiken, Clarke, Sloane, Sochalski & Silber, 2002). As nurses value quality care and a high standard of practice, inability to fulfil their professional values is likely to frustrate nurses and
lead to a greater intention to quit their jobs. Indeed, a study showed that under-staffing contributes to increased emotional exhaustion and job dissatisfaction of nurses, which further contribute to increased turnover intention (Aiken, Clarke, Sloane, Sochalski & Silber, 2002).

While the quantitative study showed that the misfit in task delegation practice contributes to turnover intention, the results also showed that when nurses’ need for task delegation slightly exceeds the amount of actual delegation of practice, their intention to leave the job becomes lowest. This may be because slight excess demand is functioning as eustress. Eustress is defined as good stress, such as pleasant or curative stress (Selye, 1976), which stimulates one’s performance. Le Fevre, Matheny and Kolt (2003) point out that the person-environment fit theory lacks a concept of eustress and assumes that any types of discrepancy between the person and environment factors cause distress, which is defined as bad stress (Selye, 1976). Le Fevre et al. also argue that merely comparing the scores of one’s needs and his/her perception of the environmental supplies, as done in the person-environment studies, does not take into account the individual’s interpretation of whether the current state of person-environment relationship (i.e., P-E fit/misfit) is desirable/undesirable. However, Le Fevre et al. also maintain that:

...the individual’s reaction to misfit, coping, or defence behaviour links to the primacy of individual interpretation. Any individual’s response to misfit is moderated by the individual’s interpretation of the environment. The individual is thus placed in the position of an agent of his or her own response, implicitly acknowledging the individual’s interpretation of the situation (p. 734).

In other words, individuals’ interpretation of whether certain types of the person-environment relationships are considered good or bad can be observed in their behavioural response to the relationships. In the thesis, nurses’ response to turnover intention illustrated their interpretation that a slight excess in demand compared with their needs for task delegation was pleasant, thus reducing turnover intention. The results of this thesis along with the critique made by Le Fevre et al. (2003) underscore the importance of considering not only individual perception of the environment/occupation, but also their interpretation of the PEO relationship itself, when investigating the effect of the fit on employees’ occupational performance. In this sense, the results of this thesis contribute to extending the facets of the person-
environment fit theory. The thesis also demonstrated the benefit of utilising polynomial regression and response surface analysis in examining the relationship between the PEO fit and occupational performance. Without utilising these types of analysis, the moderating effect of individual interpretation of the PEO relationship can be easily overlooked.

The results of hypotheses 8 and 9 did not provide much support for the effect of the PEO fit on nurses’ job performance and turnover intention. However, the results illustrated complex pictures of how different aspects of nurses’ professional orientation and their perceptions of the environment/occupation could predict different aspects of nurses’ occupational performance. These results have the following implications. First, to improve the specific dimension of nurses’ occupational performance, nurse managers need to target the specific aspects of nurses’ professional orientation and their environmental/occupational characteristics for improvement. Second, it is not plausible to examine whether or not staff nurses are satisfied with the current environmental characteristics from their job performance. This is because nurses’ professional orientation makes them maintain or even improve their performance even in an unpleasant environment. However, if nurses continuously experience an unpleasant environment, their dissatisfaction with the job is likely to increase. As a result, nurses may start leaving their jobs.

Strategies to Improve the Occupational Performance of Nurses

Based on the results of the thesis, three major strategies to improve nurses’ occupational performance have been identified. These are improving the public image of nursing, encouraging professional socialisation, and improving the health care environment and nursing roles. The following section presents these three strategies by integrating the findings of the results of the evaluative focus group.

Improving the Public Image of Nursing

The first strategy is to improve the public image of nurses. The present thesis revealed that the public image of nurses did not correspond to the current image of nursing held by nurses. Although the public image itself did not show any impact on nurses’ job performance, the results showed that it has an impact on nurses’ intention to leave their jobs. Furthermore, when the public image was translated into the organisational environment, in the forms of low pay and a lack of recognition and
participation in hospital policy making for nurses, these environmental/occupational factors also contributed to decreased job performance and the increased turnover intention of nurses. Therefore, improving the public image of nurses is crucial.

Improving the public image of nursing to retain experienced nurses as well as to recruit new employees has also been raised by a number of professional organisations (Australian Health Ministers’ Conference, 2003; Nurse Recruitment and Retention Committee, 2001; Royal College of Nursing, Australia, 1996). Based on reviewed literature and the results of the focus group, this section presents possible remedial solutions to improve the public image of nursing from two perspectives, educating the public and improving nursing education.

Public Education

Educating the public by showing current nursing practice through the media, monitoring the media exhibiting nursing scenes, career education, and encouraging individual interaction with nurses could improve the image of nursing.

Showing Current Nursing Practice through the Media

Utilising the media to educate the public can be an effective solution. As Buresh and Gordon (2000) maintain, personal interaction during hospitalisation may improve individual understanding of nursing, but individual beliefs and experience are not automatically translated into wider social beliefs of nursing. On the other hand, if such an experience or beliefs are shared by all or most of the social members, it is likely that the public image of nursing can be altered (Haslam, 1997; Worche & Rothgerber, 1997). Without media utilisation, however, it is difficult to convey an accurate image of nursing and nursing practice to a large audience in society. Therefore, it is important to establish ongoing dialogues with the media (The Woodhul Study, 1998).

One strategy to improve the public image of nursing is to portray up-to-date nursing practice and its diversity in TV commercials, TV documentary programmes and newspaper columns. One focus group participant commented;
Helen: I mean I think those ads for nursing we see on TV at the moment… I think that’s great… because people that I know that aren’t nurses would be watching that…. It’s been government run ads for nursing of late…. That’s one way you can improve the public image of nursing by giving up to date scenes of nursing and having them speak…. Even though that new program,… Nurse TV,… all those things are really good because you can just tune in there accidentally and find real live nurses today and what they do.

A psychological study showed that it is possible to inhibit a stereotypical undesirable image of a social group by directing the focus of the society on another aspect of the group, which exhibits desirable images (Dunn & Spellman, 2003). Another psychological study also suggested that when perceivers incorporate information, which challenges their stereotypical view of a group, the perceivers’ view of the group is likely to be widened and their stereotype can be reduced (Garcia-Marques & Mackie, 1999). By redirecting the public attention from such an image of nursing as “the smiling nurse at the bedside with a stethoscope round her neck” (as commented by Erin, a focus group participant) to a professional image of nurses including nurses engaged in research activities and conducting a variety of the roles in their specific clinical streams, nursing stereotypes held by the public can be challenged. However, the research also showed that more strongly held stereotypes are less susceptible to such a change (Dunn & Spellman, 2003). Therefore, it is essential that nursing organisations and professional groups appeal to the government to continue the current media campaign in TV commercials as well as exploring their own way of participating in image promotion such as engaging the media with contemporary clinical nursing and research practice. It is also important to encourage health care organisations to be proactively involved in the promotion of nursing. For example, providing their patients with a video illustrating various nursing roles was found to be an effective means of improving the patients’ understandings of nursing (Judkins, Barr, Clark & Okimi, 2000). This type of approach should be utilised at an organisational level to enhance the public image of nurses.

**Monitoring the Media Exhibiting Nursing Scenes**

A closely related strategy to the above is monitoring the media portraying nursing scenes. The media can be utilised to improve the public image of nursing. But it can also damage the image of nursing by reinforcing nursing stereotypes. One focus group participant commented;
It is argued that some of the media representations of nurses are still correspondent to nursing stereotyping such as nurses as being doctors’ handmaidens and self-sacrificing (De Vries et al., 1995; Greenwood, 1999; Hasllam, 2000; Holmes, 1997). The impact of these misrepresentations of nurses on the public image of nursing, even though they are depicted on few occasions, can be substantial. This is because people tend to perpetuate stereotypic beliefs by confirming a few exemplars, particularly in the media (Hilton & Von Hippel, 1996). Consequently, it is important to monitor the media to reduce an inaccurate image of nurses. Especially, fictional portrayals of nurses, which are depicted in a stimulating way (e.g., nurses killing patients and serving as doctors’ handmaidens or romantic partners) to draw the public’s attention, require a swift reaction from nurses to the media (e.g., programme producers). This is because this type of entertaining image is more likely to be communicated in the public, and leads to persistence of the stereotype (Schaller, Conway & Tanchuk, 2002).

**Career Education**

Studies reviewed in Chapter 3 indicated that high school students’ images of nursing are accurate in some areas (e.g., becoming a nurse requires a university degree) (Hemsley-Brown & Foskett, 1999), but are inaccurate in the others (e.g., nurses follow doctors’ orders without questioning) (Rossiter et al., 1998). Hence, it is vital to provide educational and promotional materials to high school students to improve their image of nursing. Career education is, of course, also important for nursing recruitment. Buresh and Gordon (2000) maintain that “Nursing is a word-of-mouth profession. Many of those who go into nursing are introduced to it by family members or friends who are nurses” (p. 27). A study by While and Blackman (2003) also showed that some of their sample (N = 40 UK undergraduate nursing students) entered the nursing profession because their family members were nurses. However, introducing nursing profession to family members is not effective in attracting a large number of students into nursing. On the contrary, it may result in reinforcing a
negative image of nursing, if their family members left nursing because of low pay and a lack of recognition (Buresh & Gordon, 2000). It is the students’ choice to decide whether or not they want to go into the nursing profession. To assist them with correct decision making, it is crucial to inform them of what nurses actually do, what types of knowledge and skills are required of nurses, and what types of career advancement are open to nurses. Such information improves students’ perception of nursing as a career choice. The focus group participants also commented as follows.

Helen: I believe there’s a plan to go into the schools and try and run sessions there to get boys and girls before they finish so they’ve got an idea, like career education. And then I think all those like, what are they called, those Expos [the Nursing Expo is an once-a-year event, in which all nursing schools and hospitals in Victoria hold sessions to provide nursing career education for high school students.] that we have, like things like the Great Expo and different things, encourage families to come and look at it.

Erin: …there’s so many areas [specialty] once you go to university [to study nursing]… so I think they should focus on that [diversity of practice] more and that way they would increase the registration of nurses.

A US study by Tomey et al. (1996) also showed that high school students’ perception of nurses and nursing as a career improved significantly after they attended a nursing career forum, which included a videotape presentation about nursing careers and listening and talking to nurses. Correct career promotional material should be developed to target high school students in Australia. Such material may emphasise the role of caring, as this is the central role of nursing and what attracts people into the profession. But, it also needs to challenge such negative images of nurses as having limited career opportunities, a lack of recognition and being subordinate to physicians. Alongside providing promotional material, it may be a good idea to invite high school students to audit a nursing lecture. This would provide them with ideas that being a nurse requires a theoretical knowledge base and skills to care for patients with diverse medical conditions and needs. Thus, it may stimulate the students’ career needs.

**Encouraging Individual Interaction with Nurses**

The last strategy for the public education is to encourage individual interaction with nurses. The present thesis as well as others (Dunn & Spellman, 2003; Hilton & Von Hippel, 1996; Rudman, Ashmore & Gary, 2001) suggest that affective individual interaction with the members of a stereotyped group can alter the perceivers’ perceptions of the stereotyped group in a favourable manner. This is because
stereotypical image applied to all group members is likely to be challenged by knowing how the members of the stereotyped group differ from individual to individual. However, the public’s opportunities to learn about nurses are limited unless they have nurses in their families or friends, or they have hospitalisation experience. Thus, it is important for nurses to create such opportunities for the public. One way to achieve this is to invite the public to a hospital, and show a variety of roles and tasks nurses undertake in a day and encourage individual interaction with nurses (Goldwater & Zusy, 1990). This approach may require consent from patients, if patients are exposed in the programme. Alternatively, nurses can go into the community to educate the public (Goldwater & Zusy, 1990). Nurses can hold a nursing forum, apart from career education to recruit undergraduate nursing students. The forum may includes a video presentation by which the public can acquire information as to the current state of nursing practice (e.g., a day of nurse’ work). The public can also talk to nurses and ask questions regarding health issues related to themselves or their family members. The forum is also a good opportunity to inform the public of recent innovation and research findings of nurses. Nurses should not stay only in their organisations to wait for the time that their public image has improved. But, they have to proactively seek opportunities to communicate with the public in a meaningful way. While it is difficult for individual nurses to organise such an event, they can seek support from hospitals and nursing organisations for public education.

Nursing Education

In addition to public education, the image of nursing can also be improved by changing the nursing education system and encouraging nurses to undertake postgraduate education.

Changing the Nursing Education System

There has been concern that a low university entry score for nursing may be giving a false impression to the public that being nurses does not require much intelligence. This negative impression leads to such stereotypes that nurses are assistants of doctors and take doctors’ order without questioning. Focus group participant said;
Erin: The TER scores [Australian high school leaver university entry score] for the children coming out of school isn’t very high for nursing, therefore it is perceived that you don’t need anything else to try nursing. So maybe they should promote it more that it is a profession and that yes we need intelligent people.

Someone: [But, there is a] low risk to be able to get a lot of people in that [nursing].

Erin: That [low TER scores] would be giving the wrong message. I’ve heard that actually said, “Oh well can’t get in to any of this and this, but at least you’ll make nursing.”….I hear lots of students saying, herself who was a first year nurse… she really was under the perception like a lot of people are that, well, you’ll sail through, it’s not really hard to study [nursing].

A similar comment has also been made by a nurse who participated in a study reported by the Nurse Recruitment and Retention Committee (2001). Although the entry score should not be raised just to improve the nursing image, setting a low entry score to increase student numbers does not only harm the image of nursing, but also create a situation where unsuitable candidates can enter nursing courses (Nurse Recruitment and Retention Committee, 2001). Thus, the entry score should be reviewed in a way that reflects a level of knowledge required to study nursing as an art and science.

Another approach to improve the public image of nursing is to facilitate multiprofessional education. Multiprofessional education refers to a learning process in which students from related health professions study together, and acquire not only skills, knowledge and professional attitudes necessary for their own professions, but also develop interpersonal skills and understandings toward other professions, which enable a more meaningful collaborative practice to occur at work (Horsburgh, Lamdin & Williamson, 2001). By facilitating shared education between nursing, medical, physiotherapy and other health professional students, it may lead to improvement in the public image that becoming a nurse requires a high knowledge base, some of which is equivalent to those of other health professionals. It can also convey a message that nurses work in collaboration with, but are not subservient to, other health care teams. One focus group participant also commented as follow;

Emma: One suggestion made, I can’t remember which literature now…about changing the whole education system by actually having nurses, physios, doctors, everyone who was studying your basic science and physiology, actually learning all that together so you are all at the same level. …we’re all sort of at the same level, at least just for that first year or whatever it is. Sort of bring us together a bit more.
Multiprofessional education has been conducted, in many cases as a form of pilot study, in the UK and other countries such as Canada and New Zealand. The effect of the multiprofessional education has been evaluated in many studies, and the studies showed that multiprofessional education is also effective in reducing the stereotypes held by one group of health students toward the other health professions. Tucker et al. (2003) evaluated the effect of a 3-week multiprofessional education pilot programme, which involved 113 students from nursing and medicine and which aimed to increase their clinical skills. Tucker et al. also compared confidence development of the students who participated in the multiprofessional education with those in the ordinary course. The results showed no evidence to support that the students in multiprofessional education developed more confidence in their skills than those in the ordinary course. However, the results did demonstrate that the students in the multiprofessional education programme developed a better understanding of the other professional students’ roles. Parsell, Spalding and Bligh (1998) evaluated a 2-day multiprofessional education pilot programme involving 28 final-year students from seven health professions. These professions included nursing, medicine, physiotherapy, orthoptics, physiotherapy, dentistry and therapy radiography. The results showed that the programme increased sensitivity to each other’s professional values and reduced stereotypes toward each other. However, studies by Leaviss (2000) and Parsell et al. indicated that multiprofessional education may be better implemented at an early stage of a professional education. This is because once a stereotypical image of another profession has been established, it is difficult to change.

Encouraging Postgraduate Education

Another approach emerged from the focus group is to encourage nurses to undertake a postgraduate course. The participants expressed that their experience in going back to a university to undertake a postgraduate course resulted in educating their family and friends that nursing does require a high level of knowledge.

Molly: The fact of even you know, when I had to go back to university, my father saying: “You’re a nurse what do you need to go back to uni for?” And just educating even your own family, that what you actually do.

Emma: I think everyone who I told I was doing postgraduate study in nursing were quite impressed.
Informing the public that many nurses undertake a postgraduate course in order to acquire specialised knowledge and skills can challenge the nursing stereotype and deepen the public’s understandings of nursing in a way that being a nurse does require a high educational commitment.

Encouraging Professional Socialisation

Another approach to improve the occupational performance of nurses is to encourage professional socialisation. Through professional socialisation, nurses can develop a professional self-concept, role conception, skills and values, which subsequently impact on their job performance and turnover intention. Overall, the results showed that nurses have developed a high professional orientation. Nevertheless, the results indicated that there is more space for development especially for less experienced nurses. In addition, the results suggested that nurses’ self-concept of being caring needs to be improved, since nurses who perceived the public viewing them more caring than they thought of themselves tended to perceive their job performance poorly. The descriptive analysis showed that this phenomenon can be observed in a prevalent fashion, as many nurses rated their public image of being caring more positively than their self-concept.

To enhance nurses’ self-concept through professional socialisation, it is vital to provide role models for junior nurses. Nurses serving as role models need to assist their junior nurses to identify their strengths and abilities. By being aware of positive aspects of self, a positive self-concept can be cultivated (Sheer, 1994). Nurses who serve as role models should also offer the vision and the goals of their profession. By identifying with the role models, junior nurses can assimilate a possible self, which is the self one aspires to be (Ruvolo & Markus, 1992). A possible self allows the junior nurses to set a benchmark they could possibly achieve, thus it guides their behaviours. By following the role models’ behaviours and engaging in further education to acquire as many skills and knowledge as the role models possess, junior nurses can develop a positive self. Identification with a possible self also benefits junior nurses to direct their attention to more positive feedback, which further reinforces their possible/positive selves (Cantor, 1990).
The values, role conception and clinical skills/knowledge necessary to actualise professional practice can also be fostered through professional socialisation (Laing, 1993; Strasesn, 1992). These developments first occur during basic nursing education and are continually fostered through post-graduation clinical practice. In addition to skills and role conception inherent in clinical practice, nurses can also acquire advanced skills, through the postgraduate courses, that enable them to critically reflect their practice and identify possible methods to solve problems in their daily clinical practice as well as in their organisation. Advanced skills also allow nurses to proactively engage in leadership activities and managerial/policy decision making. Although nurses often express a need for participation in hospital policy making, Wynne (2003) claims that they tend to accept organisational changes without critical reflection on how these changes might affect their practice. This is partly because nurses’ lack of knowledge about policies and organisational reforms hinders them from active involvement in the decision making (Spitzer et al., 2002). Thus, being furnished with advanced skills is important for nurses to negotiate their environment (e.g., the organisations) in a way in which their work values and role expectations are met in practice. As many of these advanced skills can be learned through postgraduate courses, it is important to monitor that professional socialisation occurs in clinical practice as well as in the academic environment.

In addition to developing a professional self-concept, role conception and work values, professional socialisation could also nurture collective self-esteem. A study showed that positive socialisation (i.e., provision of role models, organisation respecting employees’ values, provision of information about career structure) had a positive impact on the development of organisational-based self-esteem of 317 newly hired bankers (Riorden et al., 2001). Their findings suggest that positive socialisation in nursing could lead to the development of high collective self-esteem as members of the nursing profession. Developing high collective self-esteem benefits nurses to frame interpretive structure, which allows them to selectively internalise positive feedback on themselves in order to develop a positive self-concept. It also directs nurses’ attention to positive characteristics of their environment and occupation. Perceiving themselves and their environment/occupation positively leads to better occupational performance. In addition, high collective self-esteem could also reduce the negative effect of the PEO misfit on nurses’ turnover intention. This is because the
disposition to see the world positively can reduce the negative effect of the value-supply misfit on employees’ strain and job satisfaction, as evidenced in a study conducted on 241 Canadian registered nurses by Smith and Tziner (1998).

While a positive professional socialisation fosters nurses’ professional orientations and collective self-esteem, horizontal violence has the adverse effect on them. Nurses “eating their own” can be still observed in nursing practice to some degree. For example, a study by Chaboyer, Najman and Dunn (2001) indicated that junior nurses tended to perceive their colleagues to be bitchier and cliquier than experienced nurses ($N = 413$ Australian nurses). Bullying and hostile attitudes directed toward junior nurses reduce their confidence, resulting in developing a negative self-concept or even leaving their jobs. Therefore, it is important that all nurses understand and share their responsibility for creating a nurturing environment wherein a positive professional socialisation occurs.

Improving the Health Care Environment and Nursing Roles

The last approach to improve nurses’ occupational performance is to challenge the environment in a way that nurses feel they are professionally rewarded, challenged and supported, and in a way that nurses could engage in many of their roles. This is because an unpleasant environment and underutilisation of their skills can negatively impact on nurses’ intention to stay in their jobs. Although many approaches are possible, this section discusses selective issues to improve the environment and nursing roles from the viewpoints of nurse unit managers and hospital administrators.

To begin with, it is important to create an environment where nurses can conduct their roles. The role for which nurses perceived to have the least opportunity was policy decision making. Therefore, this area needs improvement. This problem can be tackled by two approaches. One approach is to increase the opportunity for staff nurses to participate in unit management decision making. Nurse unit managers can invite their staff to a meeting on a regular basis, and allow them to express their concern with unit operation and their clinical practice. The managers and staff nurses can discuss their goals, identify the methods to achieve the goals, implement the methods together and evaluate their achievements. By involving staff nurses in a variety of unit decision making, the problems are shared by all the staff and everyone can contribute to problem-solving. Nurses can also feel that their skills for decision
making are utilised and their input is valued. The other approach is to increase nurses’ participation in hospital decision making. While a need to create a pathway through which individual nurses can express their idea has been raised (Crossan, 2003), involving a large number of employees in organisational decision making is difficult, thus being avoided by many organisations. However, it is not impossible. For example, the organisation can conduct a number of focus groups, which allow nurses to express their concerns and ideas. Alternatively, the organisation can utilise a method called the large group intervention. The large group intervention involves a whole organisational system (e.g., all the employees or a large number of representative employees) by holding multisearch conferences in which these employees can discuss their future vision (a shared goal), explore the methods to achieve their goal and evaluate the outcomes (Bunker & Alban, 1997). The underlying assumption of this method is that “a great deal of information is already within the organisation and can be made accessible” (Bunker & Alban, 1997, p. 9). Although this method may involve a great deal of time, expenses and energy for the preparation and implementation, the outcome of this approach can be quite fruitful for both organisations and employees. The organisation may encounter little resistance to a new policy from its employees, as the purpose of the new policy is understood by everyone in the organisation. Moreover, what has been discussed in the conference (e.g., a need for a new policy) is proactively implemented by each employee in their own work section, resulting in a rapid as well as effective change toward the goal (Bunker & Alban, 1997). Employees also feel that they could contribute to organisational decision making and their contribution is respected. This method has been utilised in many industries. In the health care organisation, the Nursing Division of Inova Health System in the USA adopted the large intervention group, where several hundred nurses were involved, to validate their goals and the implementation approach, and discuss additional areas of problems to be solved (Drenkard, 2001).

While increasing the opportunities to utilise nursing skills contributes to the increased job performance of nurses and their intention to stay in the current jobs, merely increasing task delegation opportunities may not enhance nurses’ work motivation. This is because too much task delegation practice compared with nurses’ needs can lead to increased turnover intention. To reduce nurses’ turnover intention, it is ideal to provide an individualised task delegation opportunity to each nurse in
In accordance with their needs. However, this approach may not be feasible in many situations. An alternative solution for the managers is to invite their staff nurses to a meeting, discuss the degree of misfit in task delegation practice commonly experienced by them, and explore which of the personal and the environmental factors need intervention with the staff. Given that a heavy workload is experienced by many nurses (Buchanan & Considine, 2002; Hegney et al., 2003), they may require task delegation. In such a case, allocating additional staff (ideally, Division 1 or 3 nurses) may significantly enhance the fit at the unit level. Increasing the opportunities for task delegation may also provide nurses with more time to provide patient education. Thus, task delegation opportunities may reduce a misfit between nurses’ role conception and the perception of their actual practice in terms of providing patient education. If Division 1 or 3 nurses are not available, the allocation of additional Division 2 nurses or nurse aids may also alleviate nurses’ stress. In the event that unlicensed personnel such as nurse aids are allocated to fulfil the basic nursing tasks, they have to be adequately trained. Moreover, a list of tasks that can be legally delegated to the personnel has to be identified. In addition, an adequate supervisory arrangement for their work needs to be organised in order to alleviate the burden for registered nurses of monitoring the work of unlicensed personnel (Tuttas, 2003).

In addition to creating the environment where nurses can take their desired roles, it is also vital for the nurse unit managers and hospital administrators to create the environment in which nurses feel they are professionally rewarded. Low pay is the common problem identified in both quantitative and qualitative studies. Hence, improving the overall salary package for nurses may also improve nurses’ job performance and retention. This strategy also seems to be effective in fulfilling nurses’ need for professional recognition, which is another aspect of the environmental supplies that needs improvement. This is because nurses see pay as the most important parameter of recognition (Cronin & Becherer, 1999). Under current financial constraints, however, this strategy may not be possible. An alternative approach to alleviate the problem with pay is to provide little bonuses for excellent performance. In addition, an incremental bonus or retirement package can be provided to nurses with long tenure to express organisational appreciation for their long service (Chandra, 2003). One focus group participant also commented that “it’s not so much the money, it’s those things like recognition and little bonuses [that enables keeping
of nursing professionals]” (by Helen). Recognition can also be provided by opening up a feedback channel between nurses, patients and managers. This is because private verbal feedback and written acknowledgement from patients, co-workers and managers are identified as other important sources for nurses to obtain recognition for their performance (Cronin & Becherer, 1999).

It is also necessary to provide intellectual stimulation for nurses, as it contributes to reduction in nurses’ turnover intention. Due to transfer of the basic nursing education to tertiary sectors and provision of increasing number of postgraduate courses, current nurses are equipped with more skills and abundant knowledge than ever before. Nurse unit managers need to be aware of these educational changes as well as the content of courses, nurses have completed. By doing so, the managers can identify the areas of practice in which staff nurses’ skills and knowledge are better utilised in consultation with the staff. The managers can also share some of their managerial responsibilities with their staff nurses in accordance with their educational preparation and expertise.

Finally, it is important that nurse unit managers provide nurses with support in ways that nurses are empowered and come to respect their superiors. To achieve these goals, nurse unit managers are encouraged to adopt transformational leadership. Individual displaying transformational leadership are “charismatic, inspirational, intellectually stimulating and/or individually considerate” (Bass, 1998, p.3). Transformational leaders behave as role models for their followers, motivate the followers by providing visions and challenges, encourage the followers to be innovative and creative, consider each follower’s need for achievement and support them (Bass, 1998). Under transformational leadership, staff nurses are empowered as they share the vision with the leader, have more opportunities for decision making and problem-solving, and receive individual support for their growth needs (Fullam, Lando, Johanses, Reyes & Szaloczy, 1998; Thyer, 2003; Wynne, 2003). As a result, a transformational leader can attract more respect and admiration from the staff/followers than traditional bureaucratic leadership style.

This section presented three approaches to improve nurses’ occupational performance; improving the public image of nurses, encouraging professional socialisation, and improving the environment/occupation. As for the environmental factor, it is essential to improve the public image of nurses, as it could externally
influence nursing practice. At the same time, internally changing the health care environment in a way that enhances nurses’ occupational performance is also necessary. With regard to the nursing profession, it is vital to facilitate professional socialisation in both clinical and academic settings in order to foster nurses’ professional orientations, which guide their professional practice. Professional socialisation is also important for nurses, as it allows them to acquire skills to negotiate their environment.

Strengths of the Thesis

The strengths of the thesis lie in its conceptualisation and the method that was adopted to investigate the effect of the PEO fit on nurses’ occupational performance. With reference to the conceptualisation, this thesis has located nursing practice in the social context and examined how the PEO fit in nursing was related to the public image of nursing from the nurses’ viewpoint. The public image of nursing has been of great concern to those in nursing organisations and to health policy makers, as it has been assumed to influence nursing practice and nurse retention. However, due to the dearth of empirical studies in this area it is still not known whether the public image of nursing does actually affect nursing practice. This thesis focuses on how practising nurses interpret the public image of them and their roles and how the public image of them affects nurses’ job performance and turnover intention. Person-environment fit studies have also been criticised for not considering the social and contextual factors surrounding the person and the environment (Swarts-Kulstad & Martin, 2000). The thesis addressed these issues by capturing the PEO relationships in the macro-social context and investigating how expectations of nursing held by society and the nursing profession could influence nursing practice, nurses’ job performance and turnover intention.

Another strength in the conceptualisation of the thesis is that it emphasises the effect of the relationship between nurses’ professional needs and their perception of the environment/occupation on their occupational performance. Past nursing studies have investigated the causes of nurses’ occupational performance and tended to examine only nurses’ perception of their environment as the predictor. Thus, these studies assumed that a nurse-environment relationship is a one-way interaction in which nurses passively respond to their environment. This assumption has led researchers to overlook how nurses interpret their environment in the context of their
professional needs. The thesis has attempted to challenge this assumption, and has illustrated how both nurses’ professional needs and their perception of the environment/occupation both individually and jointly contribute to nurses’ occupational performance.

From the methodological viewpoint, three strengths are identified. First, the thesis investigated the impact of the PEO fit on nurses’ occupational performance by measuring nurses’ professional needs and their subjective perceptions of the environment/occupation. The characteristics of the environment/occupation have been measured either subjectively (i.e., by asking employees about their perceptions of the environment/occupation) or objectively (i.e., by asking organisational representatives, who are not involved in a study, to summarise their organisational features). The strength of the former method is that it emphasises the individual differences in perception and interpretation of the environment. Furthermore, this method takes into consideration that it is the individual interpretation of the environment that subsequently affects their behaviour (French & Kahn, 1962). In fact, a meta-analysis of person-environment fit studies showed that the subjective fit measure can explain a larger variance with employees’ job attitudes than the objective fit measure (Verquer et al., 2002).

Second, this thesis utilised polynomial regression analysis, instead of using difference scores, to test the effect of the PEO fit on nurses’ occupational performance. Difference scores (i.e., \((E - P)\), \((E - P)^2\) or \(|E - P|\) have been criticised for assuming the untested constraints on the coefficients. Moreover, the difference scores have been criticised for failing to examine how individual variables (i.e., \(E\), \(P\), \(E^2\), \(EP\) and \(P^2\)) contribute to explaining one’s occupational performance (Edwards, 1994, 1996, 2001, 2002; Edwards & Van Harrison, 1993). On the other hand, polynomial regression analysis allows researchers to overcome these problems. Moreover, graphical analysis of the results of the polynomial regression provides a deeper understanding of how the relationship between the person and the environment predicts occupational performance.

Finally, the thesis utilised methodological triangulation to compliment the results of the quantitative study with the inclusion of a focus group. The quantitative results have presented a complex picture of how the PEO relationships in nursing could contribute to nurses’ occupational performance. Moreover, the results suggested
that alternative explanations to the hypothesised relationships are necessary. The focus group helped to explore why certain hypotheses were rejected and what types of explanations are possible to interpret the quantitative data. The focus group data also helped to consolidate the relationships supported by the quantitative study. Utilising both quantitative and qualitative methods allowed this thesis to explore the study questions with a deeper understanding.

Weaknesses of the Thesis

While the methodology used in this thesis provided strengths to the thesis, it also provided a number of weaknesses. First, this thesis utilised regression analysis, therefore, causal relationships between the variables could not be established. The second weakness is associated with deleting outlying cases in regression analysis. While trimming the outlying cases enhances accuracy of regression analysis, it also reduces the generalisability of the thesis findings. This is because although those identified as outliers are unique and different from the others, they are still part of the reality and constitute the target population. In most of the analyses, however, less than 5% of the sample were identified as outliers. Hence, the thesis still provides results, which can be applicable to the majority of the population. Nevertheless, if all the data had been included, the generalisability of the findings would have been improved.

Third, the results of polynomial regression analysis may require cross-validation. This is because the regression equations included the higher-order terms (e.g., $E^2$ and $P^2$), and the coefficients on the higher-order terms could be unstable (Cohen et al., 2003; Edwards, 1994).

The weakness of the study also arises from a single administration of a questionnaire, which contains multiple measurements. Collecting diverse data through the use of single questionnaire may reduce the accuracy of the findings due to the problem known as common methods variance. Common methods variance is defined as artificially inflated covariance between two variables, which particularly occurs when multiple data is collected from single source at a single time using a single data collection method (Avolio, Yammarino & Bass, 1991). This is because when participants answer a questionnaire consisting of multiple scales, they tend to apply “a common set of rules or schematic framework to evaluate items or scales that represent conceptually distinct constructs” (Avolio et al., p. 571). As in many other studies, the thesis is also susceptible to the problem associated with common methods variance,
especially in measuring contrasting variables using the same instruments (e.g., nurses’ self-concept and the perceived public image of nurses). Complimenting the quantitative results with the qualitative data may, however, have alleviated the problem to some extent.

Lastly, the weaknesses of the thesis emanate from a partial use of the Collective Self-esteem Scale and its low reliability. As has been mentioned, the thesis utilised only the membership esteem subscale of the Collective Self-esteem Scale. Thus, a full moderating effect of collective self-esteem in the perception of the PEO fit may be undermined. The low reliability of the membership subscale also reduces the accuracy of the study findings. The reliability of the membership subscale in this study dropped to .52, despite the fact that the original Collective Self-esteem Scale demonstrated a reliability as high as .88 for the total scale and .80 for the membership subscale (Luftanen & Crocker, 1992). This low reliability might result from two factors. First, the Collective Self-esteem Scale was placed toward the end of the questionnaire. Therefore, the participants might have lost concentration when responding to the questions in the scale. Second, half the questions were negatively reworded to avoid a response set. Hence, some participants might have been confused in answering the questions. Due to the partial use of the Collective Self-esteem Scale and its low reliability, the results of the thesis concerning the moderating effect of collective self-esteem require cautious interpretation.

Areas for Further Investigation

This thesis investigated how nurses perceived the public image of nursing and how it could influence their nursing practice. While it is important to investigate this relationship from the nurses’ viewpoint, it is also interesting to find out how the public actually sees nurses and what they expect of them in terms of the roles and rewards they think nurses deserve. This line of study can directly examine the influence of the public image of nursing on nursing practice.

As for the impact of the PEO fit on nurses’ occupational performance, the thesis offered only partial support. However, this does not necessarily mean that the person-environment fit theory is not effective in nursing. The effect of PEO fit should further be investigated using a diverse sample to examine its applicability to nursing. This is because participants with different professional characteristics may respond to
the PEO fit differently. For example, Jackson and Raftos (1997) reported that nurses working in nursing homes often felt unable to challenge the health care environment due to limited support from management. Therefore, nurses’ intention to change the environment observed in the present thesis may be absent in nurses working in nursing homes. On the other hand, the negative effect of the misfit on occupational performance may be more prominently observed in nurses working in nursing homes than those working in acute care hospitals.

The effect of the PEO fit on other dimensions of nurses’ occupational performance also needs to be investigated. In particular, the effect on job satisfaction and organisational commitment, which subsequently impact on nursing retention (Ingersoll, Olsan, Drew-Cates, De Vinney & Davies, 2002; Sourdif, 2004), is worth examination. In addition, the dimensions of the PEO fit should be expanded. For example, the thesis measured role fit in terms of roles nurses desire/expect and the actual roles they engage in. Future nurse researchers can investigate the role fit in terms of importance and enjoyment nurses assign to each of their roles and the actual roles they engage in, as these types of role fit were found to affect participants’ task performance in an experimental condition (Bianco, Higgins & Klem, 2003).

It is also interesting to identify variables, which can moderate the relationship between the PEO fit and nurses’ occupational performance. In this thesis, nurses’ professional values were found to impact upon the relationship between the fit and their job performance. More specifically, this thesis found that nurses’ job performance was maintained by nurses’ need to deliver high standard care, even when they perceived a misfit. Such a moderating effect was also found in other variables. For instance, a study by Edwards (1996) showed that the degree of importance, which employees attach to their roles and values, moderates the impact of the PEO fit on their job attitudes. Affective disposition (i.e., disposition to see the world positively) was also found to moderate the effect of value-supply fit on employees’ job satisfaction and strain (Smith & Tziner, 1998). Singh and Greenhaus (2004) found that decision-making styles utilised to determine leaving the previous organisation moderated the employees’ perception of the PEO fit in their next careers. The findings of Singh and Greenhaus imply that different decision-making styles, which nurses use to decide their career move, may also moderate the relationship between the fit and nursing turnover. By identifying factors that moderate the relationship between the
PEO fit and nurses’ occupational performance, the PEO model can be refined to meet the needs of the nursing profession. Appropriate measures to overcome the impact of the PEO fit on nurses can then be developed, based on the refined model.

Finally, the effect of professional socialisation should be investigated. This thesis proposed that a positive professional socialisation could contribute to the development of a professional self-concept, role conception and work values. However, the effect and process of professional socialisation through the entire career of nursing is relatively unknown. This is because many studies, which focused on professional socialisation, targeted either student nurses (Clouder, 2003; Hawkins & Ewens, 1999; Randle, 2003; Yung, 1996) or newly graduate nurses (Bridgid, 1998; Taylor et al., 2001). It is important to investigate how the development of professional orientation occurs through the course of a nurse’s career and what factors precipitate and inhibit such development. Nurses’ sense of professional orientation that upholds their job performance could be the focus of such an investigation.

Conclusions

This thesis explored how different images of nursing held by society and nurses might create a PEO misfit in nursing roles and values in the health care environment. In addition, the thesis aimed to identify how the perception of fit differs with individual characteristics, and how the misfit could impact on nurses’ job performance and turnover intention.

The results showed that nurses perceive that the public views them as caring as they see themselves. However, the results also showed that nurses perceive the public views them as being less likely to be leaders, professional and intelligent compared with their self-concept. A lack of professional recognition from the public in regard to nurses’ abilities and knowledge seems to result from the invisibility of nursing roles to the majority of the public. The expansion of nursing roles, which has blurred the professional boundaries between nursing and other health care professions, has also contributed to the public’s lack of understanding of nursing as a profession.

The problem with the public image of nurses is that it can be translated into the health care environment in the forms of a lack of professional rewards, challenges and support toward nurses in conjunction with the underutilisation of nurses’ skills and knowledge. In particular, nurses perceived they were poorly rewarded in terms of
pay and recognition. They also saw themselves having a lack of opportunities to provide patient education and to participate in policy decision making. As a consequence of the social influence on nursing roles and the environment, nurses experience the PEO misfit in which their needs for skill utilisation and needs for professional recognition and rewards are not fulfilled. In other words, the thesis suggests that the existence of the PEO fit in nursing could result from an incompatible image or expectations of nursing held by the public and nurses.

The results suggested that nurses, in general, experience some degree of the PEO misfit. However, their professional orientation and their perception of the public image, actual nursing roles and the environmental supplies differ in accordance with their individual characteristics including the level of their collective self-esteem, the length of their clinical experience and the clinical areas in which they are practising. In general, nurses with higher collective self-esteem and long clinical experience tended to have higher professional orientation and perceive their environment/occupation positively. Nurses in high dependency care units tended to express higher role conception, but perceived they conducted fewer roles compared with their medical/surgical counterparts. However, the impact of collective self-esteem, clinical experience, and the clinical area of specialising was less operative in regard to nurses’ perception of the PEO fit. The results indicated that nurses’ perception of the PEO fit is partially moderated by collective self-esteem and their area of clinical practice. Improved research design may, however, be able to demonstrate more accurate pictures of the moderating effects of these variables.

The effect of the PEO relationships on nurses’ job performance and turnover intention is diverse. Overall, the results provided little support for the person-environment fit theory. The findings illustrated how different dimensions of nurses’ professional orientation and the environmental/occupational characteristics individually and jointly impacted on nurses’ occupational performance. As variability in the effect of the PEO fit exists, there are also common phenomena in the relationships between the PEO fit and nurses’ occupational performance. As for job performance, it was nurses’ professional orientation (needs) that mainly guided their performance. The positive environmental and occupational characteristics also contributed to nurses’ job performance. However, when nurses perceived a poor public image of nursing and poor environmental supplies, it was the nurses’
professional orientation that motivated them to demonstrate better performance in order to change the environment in a way that corresponds to their professional needs. While a lack of professional recognition stimulates nurses’ professional orientation, thus leading to better job performance, it has an adverse effect on nurses’ turnover intention. When nurses’ perceived themselves to have a poor public image, limited opportunities to engage in their desired roles, deprivation of professional rewards, challenges and a lack of support from their organisations, their intention to leave their jobs tended to increase. This may be because upholding their professional orientation and performance within the environment, which provides poor recognition for their work, could be frustrating and unpleasant. Investing more energy to change the environment may also cause physical and emotional distress, if such effort is not rewarded promptly.

To enhance nurses’ occupational performance, the characteristics of the health care environment need to be improved internally and externally. As for the external change, the public image of nursing should be altered in a way that nurses’ contribution to health care is socially acknowledged. With regard to the internal change, nurse unit managers and hospital administrators need to make an effort to change the environment to a way in which nurses have more opportunities for important decision making and in which nurses can receive adequate rewards, professional challenges and organisational support for their performance. It is also important to facilitate effective professional socialisation within the health care environment as well as in the academic setting. Such socialisation fosters nurses’ professional orientation, which guides their performance. Professional socialisation also provides skills, which allows nurses to effectively change the environment.

The thesis has provided an insight into how nurses perceive their practice in relation to the values society places on nursing. The thesis also provided measures, which may possibly enhance social recognition of nursing, the characteristics of the health care environment and nurses’ professional orientation. It is thought that the present thesis would be helpful for nurses and nursing organisations in their endeavour to improve the public image of nursing and nursing practice.
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APPENDICES

Appendix A: The nursing experts involved in the judgemental panel review
Appendix B: Letter to nursing experts on pilot study evaluation
Appendix C: Questionnaire (final version)
Appendix D: Letter of Consent for the pilot study
Appendix E: Pilot study evaluation form
Appendix F: The Results of the Pilot Study
Appendix G: Cover letter for the quantitative study
Appendix H: Brief descriptions of the cases deleted in the analysis
Appendix I: Results of the analysis with all the usable cases included
Appendix J: Invitation to focus group (flier)
Appendix K: Informed consent form for focus group
Appendix L: Demographic questionnaire used in the focus group
Appendix M: The final factor analysis with the reversed score in factor II
Appendix N: The means and the standard deviations of the variables and correlation analysis
Appendix O: The results of response surface analysis on the selected relationships
Appendix P: Descriptions of the focus group participants
Appendix Q: The results of the focus group analysis
Appendix A: The nursing experts involved in the judgemental panel review

Table A1
Descriptions of the nursing experts

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<tr>
<th>Name</th>
<th>Professional/academic affiliation</th>
<th>Reasons for the invitation</th>
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<tr>
<td>Professor Annette Street</td>
<td>School of Nursing and Midwifery at La Trobe University</td>
<td>They have previous research experience on the images of nurses and/or hold current research interest in nursing practice</td>
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<tr>
<td>Dr. Beverley Wood</td>
<td>School of Nursing and Midwifery at La Trobe University</td>
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<td>Associate Professor Brenda</td>
<td>School of Nursing at the University of Melbourne</td>
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<td>Ms. Lorraine Burt</td>
<td>School of Nursing and Public Health at Edith Cowan University</td>
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<tr>
<td>Professor Patricia Dunning</td>
<td>School of Nursing at the Melbourne University &amp; metropolitan public hospital involved in this study</td>
<td>Professor Dunning is affiliated with a large metropolitan public hospital where the largest sample was targeted in this study. Thus, she was identified an appropriate person to examine the relevance and applicability of the questions to the current nursing practice</td>
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<tr>
<td>Dr. Jaya Pinikahana</td>
<td>School of Nursing at the Melbourne University</td>
<td>Dr. Pinikahana was invited as a reviewer due to his expertise in quantitative study and instrument development</td>
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Appendix B: Letter to nursing experts on pilot study evaluation

Dear xxxxxx,

Thank you for agreeing to comment on the content of this questionnaire that will be used to investigate the relationship between the image of nursing and nursing practice. The main objectives of the study are to explore 1) how nurses’ professional self-image/concept is related to their perception of their public image; 2) how nurses’ professional self-image/concept relates to their role conception (nurses’ expectation and ideal views of their roles) and work-related values that they expect and desire to receive from their environment (e.g. levels of autonomy, respect, and independence); 3) how nurses interpret their public image affects their actual roles and the environmental characteristics/reward structure (e.g. the amounts of autonomy, respect and independence actually provided in their work environment); 4) how nurses’ personal factors including their clinical experience, areas of practice and the degree of collective self-esteem affect their perceptions of the public image and nursing practice; and 5) how nurses’ ideal as compared to actual forms of nursing practice affects their job performance and intention to continue or to quit a job. Therefore, my research questions are:

1. How does nurses’ professional self-concept compare with nurses’ perception of their public image?
2. How does the relationship between nurses’ self-concept and perceived public image affect the perceptions of ideal and actual nursing practice?
3. How do nurses’ perceptions of the ideal and actual nursing practice influence job performance and turnover intention?

The proposed study aims to examine the above linkages, and to develop strategies to counter any negative effect that the public image of nurses might have on nurses.

You are asked to comment on the content of the questionnaire that contains several sections measuring nursing image, nurses’ role conception, work values, job performance, intention to quit a job, and degree of collective self-esteem. Please read the description of each section of the questionnaire presented in Attachment B and examine the relevance of each item of each section and each section as a whole to the objectives of the study using the separate evaluation form in Attachment A. Instructions for the evaluation procedure are described on the evaluation form. The definitions of some terms are described in Attachment C. (Please note that you are not asked to answer the question items in the questionnaire) Upon completion, please place the evaluation form into the envelope provided and post it by February 21st.

I would like to remind you that your participation in this study is voluntary and withdrawing from the study will not in any way prejudice a participant’s position as an employee or as a student. However, your professional opinions regarding the content of the questionnaire are invaluable for this study and I deeply appreciate your assistance.

Yours sincerely,

Miyuki Takase
Content Validity Evaluation Form (Attachment A)

Please provide your professional judgement on the relevance of each item of each section of the questionnaire and each section as a whole to the study objectives. The research questions are:

1. How does nurses’ professional self-concept compare with nurses’ perception of their public image?
2. How does the relationship between nurses’ self-concept and perceived public image affect the perceptions of ideal and actual nursing practice?
3. How do nurses’ perceptions of the ideal and actual nursing practice influence job performance and turnover intention?

Instructions for the content validity exercise are presented below.

1. Please consider the relevance of each item of each section and each section as a whole to the research objectives using the following rating system and circle correspondent number.


2. If you rate an item and/or a section as a whole either 1 or 2, please specify your reasons for doing so and make suggestions to improve the items and/or the section briefly in the next column. You may also recommend deleting the item.
3. You are also asked to identify areas, which are not covered by such items, but you feel they are important to include.

Example: If you felt the first item of the section A-1 is not relevant, you might rate as follow.


Now please proceed to the next page.
Section A
1. Please rate the relevance of each item to the research objectives in accordance with your professional judgement. If you have rated 1 or 2, please provide your comments.

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2. Please rate the relevance of Section A as a whole using the same rating system, and provide your comments on areas you think should be modified. If you feel there are any further items that need to be included, please advise.

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**Section D**

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**Section E**

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<tr>
<th>Item</th>
<th>1= not relevant</th>
<th>2= somewhat relevant</th>
<th>3= quite relevant</th>
<th>4= very relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
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<tr>
<td>Item 2</td>
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<td>Item 3</td>
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<tr>
<td>Item 4</td>
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<td>Item 5</td>
<td>1 2 3 4</td>
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<td>Item 6</td>
<td>1 2 3 4</td>
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<tr>
<td>Item 7</td>
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<tr>
<td>Item 8</td>
<td>1 2 3 4</td>
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<tr>
<td>Item 9</td>
<td>1 2 3 4</td>
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</tr>
</tbody>
</table>
2. Please rate the relevance of Section E as a whole using the same rating system, and provide your comments on areas you think should be modified. If you feel there are any further items that need to be included, please advise.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

Comments:

Section F
1. Please rate the relevance of each item to the research objectives in accordance with your professional judgement. If you have rated 1 or 2, please provide your comments.

<Rating System>
1= not relevant 2= somewhat relevant 3= quite relevant 4= very relevant

<table>
<thead>
<tr>
<th></th>
<th>Item 1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Item 2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Item 3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Item 1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
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<td>2</td>
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<td>4</td>
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<td></td>
<td>Item 3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Please rate the relevance of Section F as a whole using the same rating system, and provide your comments on areas you think should be modified. If you feel there are any further items that need to be included, please advise.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

Comments:

This is the end of evaluation form.
I appreciate you assistance to validate the questionnaire. Please place the evaluation form into the envelope provided and post it. Thank you very much.
Descriptions of the questionnaire (Attachment B)

Section A
This section contains a modified version of the Porter Nursing Image Scale developed by Porter and Porter (1991) to explore nurses’ self-image/concept. The scale consists of 22 adjectives, which are subgrouped into three factors: interpersonal power, interpersonal relations, and intrapersonal ability. The interpersonal power factor assesses the professional aspects of nurses such as leadership, independence and scientific aptitude. The interpersonal relations factor measures caring attitudes and interactive aspects of nurses. Finally, the items in the intrapersonal ability factor are concerned with the rationality of nurses. The items will be rated using a 6-point Likert scale. Low scores indicate a negative self-image and high scores are associated with a positive self-image (The scores of the items with * are reversed). This section will be used to identify nurses’ self-concept as nurses as well as to measure the perceived public image of nurses. In the latter case, participants will be instructed to rate the items in terms of how they think the public sees them.

Section A-1: Interpersonal power factor
As a nurse, I consider I am

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Powerful</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Weak*</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Bold</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Intelligent</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Follower*</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Scientific</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>

Section A-2: Interpersonal relations factor
As a nurse, I consider I am

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compassionate</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Nurturing</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Warm</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Patient</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Respectful</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Responsible</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Compromising</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>

Section A-3: Intrapersonal ability factor
As a nurse, I consider I am

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organised</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Rational</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Competent</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Logical</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Controlled</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>


Section B
This section was designed to measure nurses’ conception of their decision-making role and patient care roles for this study. The section consists of two factors, each includes six items measuring nurses’ desire/expectation to engage in one of above two roles. The items for decision-making
factor were derived from the Jefferson Survey of Attitudes Toward Physician-Nurse Collaboration (Hojat et al., 1999) and the Staff Nurse Role Conception Inventory (Taunton, 1986). These items are intended to assess nurses’ conception of decision-making concerning patient care and hospital policies affecting their work environment. Four items were extracted from the Jefferson Survey, and two other items were derived from the autonomy factor of the Staff Nurse Role Conception Inventory.

The items for patient care role (caring factor) were derived from the patient services factor of the Staff Nurse Role Conception Inventory, but some items were modified for this study. This factor is intended to measure how strongly nurses are oriented to or desire to engage in patient care. (Taunton, 1986; Taunton & Otteman, 1986).

The items will be rated using a Likert scale ranging from 1= strongly disagree to 6= strongly agree. Therefore, high scores indicate nurses’ having strong desire to engage in both roles (The scores of the items with * are reversed). The same items will be administered to measure how nurses perceive their roles in the actual work situation.

Section B-1: Decision-making factor

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Disagree</td>
</tr>
<tr>
<td>1</td>
<td>I should contribute to decisions regarding the hospital discharge of patients.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I should be involved in making policy decisions affecting my working conditions.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I should not be involved in making policy decisions concerning the hospital support services on which my work depends*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>The primary focus of my role is to carry out the doctor’s orders*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I should develop the patient’s nursing care plan based on nursing diagnoses.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>I should have the freedom to initiate referrals to other health care providers without consulting with the patient’s attending doctors.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Section B-2: Patient care role factor

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Disagree</td>
</tr>
<tr>
<td>1</td>
<td>I should omit patient education when it causes delays in the care of other patients*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I should not assign others to assist patients with activities of daily living.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I should not perform some of the technical procedures for a patient when they could be done by ancillary personnel*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I should not assign personal hygiene measures for patients to other personnel.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I should spend most of their time providing direct patient care.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>I should provide sufficient emotional support for patients while conducting procedures or treatments.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Section C

The following items were derived from an instrument developed by Manhardt (1972) to measure diverse dimensions of work values, which are referred to as employees’ preferences/needs to have certain work characteristics/rewards that reinforce their professional values. The items contained in this section are concerned with long-range career objectives, comfortable working environment and interpersonal relationships, and with intrinsic job characteristics such as provision of autonomy, job variety, intellectual stimulation, feeling of accomplishment. The items will be rated with a Likert scale ranging from 1 = strongly disagree to 6 = strongly agree (The scores of the items with * are reversed).

This section will be used to assess nurses’ work values and the actual environmental rewards (reinforcement) they receive. Thus, the higher scores indicate nurses’ strong desire for these work values and their perception of environment providing abundant intrinsic and extrinsic rewards.

It is important to me to have a job or work environment that;

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>requires originality creativeness.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>makes use of my specific educational background.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>does not encourage continued development of knowledge and skills*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>is respected by other people.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>provides job security.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>provides the opportunity to earn a high income.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>makes a social contribution by the work I do.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>does not give me the responsibility for taking risks*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>does not require working on problems of central importance to the organisation*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>involves working with congenial associates.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>provides change and variety in duties and activities.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>provides comfortable working conditions.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>permits advancement to high administrative responsibility.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>does not permit working independently*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>rewards good performance with recognition.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>provides intellectual stimulation.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>does not have clear cut rules and procedures to follow*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>permits me to work for superiors I admire and respect.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>permits a regular routine in time and place of work.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>does not require meeting and speaking with many other people*.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>permits me to develop my own methods of doing the work.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>provides a feeling of accomplishment.</td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>

This scale is based on the work value scale developed by Manhardt, P.J. (1972). Job orientation of male and female college graduates in business, Personnel Psychology, 25, 361–368. Reprinted with permission of Personnel Psychology.
Section D
The items presented in this section were derived from the collective self-esteem scale developed by Luhtanen and Crocker (1992). The original collective self-esteem scale consists of four factors: membership, private and public collective self-esteem, and importance to identity. In this study, only the membership factor is used. Membership collective self-esteem items measure how good or worthy a person thinks s/he is as a member of their social groups. Responses will be made on a 6-point Likert scale (1= strongly disagree to 6= strongly agree). Thus, higher scores indicate a positive collective self-esteem (The scores of the items with * are reversed).

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am a worthy member of the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I feel I don’t have much to offer to the nursing profession*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I am a cooperative participant in the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I often feel I am a useless member of the nursing profession*.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>


Section E
This section has been designed to assess task-based performance of nurses in organisations, and consists of nine general statements that describe how well employees meet criteria and expectations of organisations in carrying out assigned tasks with responsibility, expertise and effectiveness.

These statements were originally developed by Goodman and Svyantek (1999) based on an organisational appraisal form used in a major Midwestern manufacturing organisation in the USA, but were reworded in a way that is relevant to all the nurses with various positions and experience. The modified statements will be rated by the subjects using a Likert scale with 6 indicating the strongest agreement on high task performance (The scores of the items with * are reversed).

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I achieve the objectives of the job required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I meet the criteria for performance required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I do not demonstrate expertise in all job-related tasks required of me*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I do not fulfil all the requirements of the job assigned to me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I could manage more responsibility than typically assigned.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>It appears to me that I am suitable for a higher level role.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>7</td>
<td>I am not competent in all areas of the job and tasks required of me*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>8</td>
<td>I perform well in the overall job by carrying out tasks as expected.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9</td>
<td>I plan and organise to achieve objectives of the job and meet timelines.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Section F

The items in this section are based on Withdrawal Cognitions Scale, which measures turnover cognition in three factors (i.e., thinking of quitting, searching for a job, and intention to quit), developed by Mowday, Koberg and MacArthur (1984). The original three items in the Withdrawal Cognitions Scale were modified to measure two different occasions of nurses' turnover intention, that is, leaving organisations to look for another nursing job and leaving nursing per se, each consists of three items. The modified items will be rated by a 6-point Likert scale with the higher score indicating strong turnover intention (The scores of the items with * are reversed).

Section F-1: Items related to intention to leave current organisation

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All things considered, I would like to find a nursing job in a different organisation.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I will not look for a new nursing job in the near future*.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I intend to remain in the current organisation more than a year*.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Section F-2: Items related to intention to quit nursing

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All things considered, I would like to find a non-nursing job.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I will probably look for a non-nursing job in the near future.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I do not intend to quit nursing within a year*.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>


This is the end of questionnaire.
Operational definitions of terms (Attachment C)

- Perceived public image of nurses: This is defined as images of nurses that nurses believe the public holds of them. It is measured by the Porter Nursing Image Scale (Porter & Porter, 1991).
- Nurses’ self-concept: This refers to images/beliefs nurses hold about themselves (Brockner, 1988), and this is also measured by the Porter Nursing Image Scale (Porter & Porter, 1991).
- Role conception: This is defined as nurses’ expectations/desires about what their roles as nurses should be (Corwin, 1961). The proposed study places special interest in nurses’ conceptions of their caring and decision-making roles. Role conception is measured by the selected items from the Jefferson Survey of Attitude Toward Physician-Nurse Collaboration (Hojat et al., 1999) and the Staff Nurse Role Conception Inventory (Taunton, 1986).
- Actual nursing role: This is defined as tasks or functions nurses think they actually engage in or are assigned to in daily practice. It is measured by the same instrument used to measure nurses’ role conception.
- Work values: This is referred to as nurses’ preferences/needs to have certain work characteristics such as autonomy and better pay (French & Kahn, 1962), and is measured by the Work Value Scale developed by Manhardt (1972).
- Environmental reinforcement: This is defined as nurses’ judgments of their work characteristics that are measured in contrast with their work values. It is measured by the Work Value Scale developed by Manhardt (1972).
- Person-environment fit: This is defined as a harmonious relationship/congruence between nurses’ preferences and environmental characteristics (Dawis & Lofquist, 1984). Three dimensions of the person-environment fit between the perceived public image of nurses and nurses’ self-concept, between nurses’ role conception and actual role, and between nurses’ work values and actual environmental reinforcement will be explored in the proposed study. The person-environment fit is measured by a shared variance between the pair of variables (e.g., a variance shared by the perceived public image of nurses and nurses’ self-concept).
• Job performance: This is defined as nurses’ behaviour to conduct assigned nursing tasks with effectiveness, and is measured by the task performance scale developed by Goodman and Svyantek (1999).

• Turnover intention: This refers to nurses’ withdrawal behaviour from a job represented by thinking of quitting, searching for a new job and intention to quit, and is assessed by the Withdrawal Cognitions Scale (Mowday, Koberg & MacArthur, 1984).

• Nurses’ collective self-esteem: This is defined as nurses’ judgment of their social worthiness as members of the nursing profession and is measured by the membership subscale of the Collective Self-esteem Scale (Luhtanen & Crocker, 1992).
Appendix C: Questionnaire (final version)

Survey on Nurse-Environment Relationship

~ What do nurses believe are the ideal images, roles and values of nursing? What do nurses perceive the actual images, roles and values of nursing to be?~

Code Number:
[Section A]
Please read this instruction first.

In the following section, you are asked to rate how you see yourself as a nurse. Please answer the questions using the rating system indicated below and circle the corresponding number.

**Rating System**

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Disagree somewhat</th>
<th>4 = Agree somewhat</th>
<th>5 = Agree</th>
<th>6 = Strongly agree</th>
</tr>
</thead>
</table>

As a nurse, I consider I am

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Disagree</th>
<th>Answer Box</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A leader</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Compassionate</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Logical</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Confident</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Professional</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>In control</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Compromising</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Respectful</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Intelligent</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Patient</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Organised</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Responsible</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Powerful</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>A follower</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Competent</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Rational</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Nurturing</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Independent</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Warm</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Section B]
Please read this instruction first.

In this section, you are asked to rate how you think the public views nurses. Please answer the questions using the rating system indicated below and circle the corresponding number.

Rating System

<table>
<thead>
<tr>
<th>1= Strongly disagree</th>
<th>2= Disagree</th>
<th>3= Disagree somewhat</th>
<th>4= Agree Somewhat</th>
<th>5= Agree</th>
<th>6= Strongly agree</th>
</tr>
</thead>
</table>

I think the public sees nurses as being

<table>
<thead>
<tr>
<th>No</th>
<th>PUBLIC IMAGES</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disagree</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>1</td>
<td>Leaders</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Compassionate</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Logical</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Confident</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Professional</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>In control</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Compromising</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Respectful</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Intelligent</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Patient</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Organised</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Responsible</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Powerful</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Followers</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Competent</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Rational</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Nurturing</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Independent</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Warm</td>
<td></td>
</tr>
</tbody>
</table>

In this section, you are asked to rate **how you want to perform your nursing roles in the areas of decision-making and patient care**. Please answer the questions using the rating system indicated below and circle the corresponding number.

**Rating System**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>2</td>
<td>Disagree</td>
</tr>
<tr>
<td>3</td>
<td>Disagree somewhat</td>
</tr>
<tr>
<td>4</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>5</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

**I think that as a nurse**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I should contribute to decisions regarding the hospital discharge of patients.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>I should omit patient education when it causes delays in the care of other patients.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>I should not delegate division two nurses or nurse aids to assist patients with activities of daily living.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>I should be involved in making policy decisions affecting my working conditions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>I should not be involved in making policy decisions concerning the hospital support services on which my work depends.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>I should perform some of the technical procedures for a patient even if they could be done by ancillary personnel such as division two nurses.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>I should not assign personal hygiene measures for patients to other personnel including division two nurses or nurse aids.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>The primary focus of my role is to carry out the doctor’s orders.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>I, as a division one nurse, should spend most of my time providing direct patient care.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>I should be responsible for developing a patient nursing care plan in collaboration with other health professionals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>I should provide sufficient emotional support for patients while conducting procedures or treatments.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>I should have the freedom to initiate referrals to other health care providers without consulting with the patient’s attending doctors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

[Section D]
Please read this instruction first.

This section is similar to the previous one in which you were asked to rate how you would like to perform your nursing roles. In this section, however, you are asked to rate how you actually perform those nursing roles. Please circle the number that reflects your opinion on each question.

**Rating System**

1= Strongly disagree  2= Disagree  3= Disagree somewhat  4= Agree somewhat  5= Agree  6= Strongly agree

**I think that as a nurse**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I have opportunities to contribute to decisions regarding the hospital discharge of patients.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I have no choice but to omit patient education when it causes delays in the care of other patients.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I do not delegate division two nurses or nurse aids to assist patients with activities of daily living.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I am involved in making policy decisions affecting my working conditions.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I am not involved in making policy decisions concerning the hospital support services on which my work depends.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>I perform some of the technical procedures for a patient even if they could be done by ancillary personnel such as division two nurses.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>7</td>
<td>I do not assign personal hygiene measures for patients to other personnel including division two nurses or nurse aids.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>8</td>
<td>The primary focus of my job is to carry out the doctor’s orders.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9</td>
<td>I, as a division one nurse, spend most of my time providing direct patient care.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>10</td>
<td>I am responsible for developing a patient nursing care plan in collaboration with other health professionals.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>11</td>
<td>I provide sufficient emotional support for patients while conducting procedures or treatments.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>12</td>
<td>I have the freedom to initiate referrals to other health care providers without consulting with the patient’s attending doctors.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

[Section E]

Please read this instruction first.

The following section contains statements that describe certain aspects of the job/work environment. Please rate **how desirable they are to you** using the rating system indicated below and circle the corresponding number.

**Rating System**

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Disagree somewhat</th>
<th>4 = Agree Somewhat</th>
<th>5 = Agree</th>
<th>6 = Strongly agree</th>
</tr>
</thead>
</table>

**It is desirable to me to have a job or work environment that**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>requires originality creativeness.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>makes use of my specific educational background.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>does not encourage continued development of knowledge and skills.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>is respected by other people.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>provides job security.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>provides the opportunity to earn a high income.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>7</td>
<td>makes a social contribution by the work I do.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>8</td>
<td>gives me the responsibility for challenging current clinical practices.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9</td>
<td>requires working on problems of central importance to the organisation.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>10</td>
<td>involves working with congenial associates.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>11</td>
<td>provides change and variety in duties and activities.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>12</td>
<td>provides comfortable working conditions.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>13</td>
<td>permits advancement to higher duties in a leadership role.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>14</td>
<td>does not permit working independently.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>15</td>
<td>rewards good performance with recognition.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>16</td>
<td>provides intellectual stimulation.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>17</td>
<td>has clear cut rules and procedures to follow.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>18</td>
<td>permits me to work for superiors I admire and respect.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>19</td>
<td>permits a regular routine in time and place of work.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>20</td>
<td>does not require meeting and speaking with many other people.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>21</td>
<td>permits me to develop my own methods of doing the work.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>22</td>
<td>provides a feeling of accomplishment.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

Please read this instruction first.

Using the same instrument, please rate **how true the following statements are in your work or work environment** using the rating system indicated below and circle the corresponding number.

**Rating System**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>requires originality creativeness.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
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<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>does not encourage continued development of knowledge and skills.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>is respected by other people.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>provides job security.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>provides the opportunity to earn a high income.</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>7</td>
<td>makes a social contribution by the work I do.</td>
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<tr>
<td>8</td>
<td>gives me the responsibility for challenging current clinical practices.</td>
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<td>10</td>
<td>involves working with congenial associates.</td>
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<td>11</td>
<td>provides change and variety in duties and activities.</td>
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<td>provides comfortable working conditions.</td>
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<td>does not permit working independently.</td>
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<td>15</td>
<td>rewards good performance with recognition.</td>
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<td>does not require meeting and speaking with many other people.</td>
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</tr>
<tr>
<td>22</td>
<td>provides a feeling of accomplishment.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

[Section G]

Please read this instruction first.

The next section asks you to evaluate yourself as a member of nursing profession. Please circle the number that reflects your opinion on each question.

*Rating System*

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>2</td>
<td>Disagree</td>
</tr>
<tr>
<td>3</td>
<td>Disagree somewhat</td>
</tr>
<tr>
<td>4</td>
<td>Agree Somewhat</td>
</tr>
<tr>
<td>5</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am a worthy member of the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I feel I do not have much to offer to the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I am a cooperative participant in the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I often feel I do not contribute sufficiently to the nursing profession.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>


[Section H]

Please read this instruction first.

The next section asks you to rate your overall performance as a nurse. Please circle the number that reflects your opinion on each question. The rating system is described below.

*Rating System*

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>2</td>
<td>Disagree</td>
</tr>
<tr>
<td>3</td>
<td>Disagree somewhat</td>
</tr>
<tr>
<td>4</td>
<td>Agree Somewhat</td>
</tr>
<tr>
<td>5</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I achieve the objectives of the job required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>I meet the criteria for performance required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I do not demonstrate expertise in all job-related tasks required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I do not fulfil all the requirements of the job assigned to me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I could manage more responsibility than typically assigned.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>It appears to me that I am suitable for a higher level role.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>7</td>
<td>I am not competent in all areas of the job and tasks required of me.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>8</td>
<td>I perform well in the overall job by carrying out tasks as expected.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9</td>
<td>I plan and organise to achieve objectives of the job and meet timelines.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

[Section I]
Please read this instruction first.

This section is to identify what you think of remaining in the nursing profession. Please circle the number that reflects your opinion on each question. The rating system is described below.

**Rating System**

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answer Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All things considered, I would like to find a nursing job in a different organisation.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2</td>
<td>All things considered, I would like to find a non-nursing job.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3</td>
<td>I will not look for a new nursing job in the near future.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4</td>
<td>I will probably look for a non-nursing job in the near future.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5</td>
<td>I intend to remain in the current organisation more than a year.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6</td>
<td>I do not intend to quit nursing within a year.</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>


[Section J]

Please read this instruction first.

This section asks you to provide some demographic data. Please circle the number that corresponds to an appropriate response in each question.

Q1. Please indicate your gender.

1  Female  2  Male

Q2. Please indicate how many hours per week you are working as a nurse.

1  ≥ 35 hours/week  2  < 35 hours/week

Q3. Please indicate your age in years.

Years old

Q4. Please indicate the number of years you have been actually working as a registered nurse. If you have less than one year’s experience, please specify by the number of months.

Years or Months
Q5. Please specify all your educational qualifications (e.g., Nursing Diploma, Postgraduate Diploma in Emergency Nursing, Master of Nursing by Coursework).

Q6. Are you currently undertaking a postgraduation course?

1 Yes (Please specify: )
2 No

Q7. Please indicate your current speciality.

1 Oncology
2 Medical
3 Surgical
4 Critical (Emergency or ICU)
5 Psychiatric/Mental health
6 Paediatrics
7 Gerontology
8 Palliative care
9 Other (Please specify):

Q8. Please indicate your position.

1 Clinical
2 Non-clinical
3 Other (Please specify: )

Q9. Please indicate the characteristics of your current work place.

1 Metropolitan/public hospital
2 Metropolitan/private hospital
3 Rural/public hospital
4 Rural/private hospital
5 Other than a hospital (Please specify: )

Q10. Please indicate your working condition.

1 Permanent staff
2 Either casual, bank/pooled or agency staff

Thank you very much for your cooperation. Your assistance is valuable to this study. Please do not leave your name on this questionnaire. Upon completion, please place the questionnaire in the reply-paid envelope provided, and post it. It is important for you to retain the cover letter, which includes my contact number and your randomly assigned code number. Presenting your code number enables me to delete your responses if you decide to withdraw from the study at a later stage, as I will not know who has returned the questionnaires.
Appendix D: Letter of Consent for the pilot study

Full project title: The relationship between images of nursing and person-environment fit
Principal researcher: Dr. Phillip Maude
Associate researcher: Associate Professor Elizabeth Manias
Student researcher: Ms. Miyuki Takase
Version: 1
Date: 
Code number:

The School of Nursing
The University of Melbourne
723 Swanston Street, Carlton,
Victoria 3053

Dear colleague,

Introduction
You are invited to participate in a research study conducted by Miyuki Takase, a PhD candidate at the School of Nursing, the University of Melbourne. The study will meet the full requirements for a PhD degree.

Prospective participants will come from a group of postgraduate student nurses from one university in Melbourne. A total of 50 nurses are expected to participate in this pilot study.

Purpose of the Pilot Study
This is a pilot study examining clarity and relevance of the questionnaire that will be used for the main study. The purpose of the main study is to: 1) compare the perception of the public image of nurses with their self-image as a nurse, 2) examine how differences in the images are associated with differences between their ideal and actual work characteristics, and 3) investigate how the relationship between ideal and actual work characteristics are related to their job performance and intention to remain in a job. This study aims to clarify the relationship between these factors. This will enable strategies to improve nursing practice to be developed.

Procedures
I am very interested in your professional opinions about the questionnaire. They will help me fulfil my study purposes. The procedures for the pilot study include completing a questionnaire that will elicit information about your background characteristics, your perception of the public image of nurses, your own self-image as a nurse, your perception of ideal and actual nursing roles and workplace characteristics, your feelings about yourself as a nurse as well as your job performance (self-rating) and intention to remain in a job. Then, you will be asked to provide your opinions on these questions in terms of clarity of expression, their applicability to your nursing practice and the amount of time required to answer the questionnaire on a separate form accompanied with the questionnaire. This questionnaire may take approximately 30 minutes to complete.

If you are interested in participating in this pilot study, please complete the questionnaire attached to this letter, place it into either the box provided or into the provided reply-paid envelope upon completion, then post it to the address indicated above (the address is printed on the reply-paid envelope) by ---date---. By returning the survey, it will be assumed that you have consented to participate in this project.
In the case that you do not answer all the questions, the information you do provide will be used in this study. However, it will be much appreciated if you answer all the questions.

Confidentiality of Records and Privacy
It should be emphasised that your privacy will be protected within the limitations of the law. Your responses will be entered into a computer with a code and treated as group data. Hence, you will not be identifiable in any report and publications. In addition, you are advised not to write your name on either the questionnaire or the envelope. This will help to avoid identifying you as a respondent.

Your anonymous personal data will be kept in locked storage in the School of Nursing at the University of Melbourne and only the researchers will have access to it. Furthermore, your data will be only used for the purpose of this research project and will be destroyed five years after the completion of this study.

Voluntary Participation
Your participation is voluntary. Therefore, it is your own choice whether or not to participate in this study. You may also withdraw from the study at any time you wish up until when the data has been analysed. If you decide not to participate or withdraw from the study, it will not in any way prejudice your position as a student. To enable me to delete your data from analysis, you will be asked to present your randomly assigned code number printed on this letter, because I am unable to identify your questionnaire. Hence, it is important that you retain this letter.

Results of the project
The results of the pilot study as well as the whole project will appear in the student researcher’s PhD dissertation (the project title is printed at the top of this letter). The dissertation will be available in the library at the University of Melbourne. In addition, the results of the study may be reported in nursing journals and/or conferences.

Possible Benefit for Participating this Study
Although you may not directly benefit from participation in this study, the study findings are expected to provide some suggestions for improving the nursing work environment. Thus, your participation is very important for this study.

Ethical Guidelines
This project will be carried out according to the National Statement on Ethical Conduct in Research Involving Humans (June, 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies. The ethical aspects of this research project have also been approved by the Human Research Ethics Committee of the University of Melbourne.

Information and Problems
If you require further information or if you have any problems concerning the project in which you are involved, you should contact the principal investigator. The principal investigator responsible for this project is Dr. Phillip Maude, a senior lecturer of the School of Nursing at the University of Melbourne, telephone 8344 0771 or the student researcher, Miyuki Takase on 8344 7507.

I look forward to your participation in this study.
Thank you for your consideration.

Yours sincerely,

Miyuki Takase
Appendix E: Pilot study evaluation form

The following questions elicit your response to this questionnaire. Please circle the appropriate number representing your answers and provide your comments below.

Q1. How long did it take to answer all the questions in the questionnaire?

<table>
<thead>
<tr>
<th></th>
<th>1 Less than 20 mins</th>
<th>2 20 – 30 mins</th>
<th>3 30 – 40 mins</th>
<th>4 More than 40 mins</th>
</tr>
</thead>
</table>

Q2. The questionnaire did not take too much time to complete.

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly agree</th>
<th>2 Agree</th>
<th>3 Agree somewhat</th>
<th>4 Disagree somewhat</th>
<th>5 Disagree</th>
<th>6 Strongly disagree</th>
</tr>
</thead>
</table>

Your comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Q3. The meaning of some questions is not clear.

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly agree</th>
<th>2 Agree</th>
<th>3 Agree somewhat</th>
<th>4 Disagree somewhat</th>
<th>5 Disagree</th>
<th>6 Strongly disagree</th>
</tr>
</thead>
</table>

Your comments and please indicate which questions are not clear:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Q4. The questions reflect what they are meant to measure.

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly agree</th>
<th>2 Agree</th>
<th>3 Agree somewhat</th>
<th>4 Disagree somewhat</th>
<th>5 Disagree</th>
<th>6 Strongly disagree</th>
</tr>
</thead>
</table>

Your comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Q5. It was easy to answer the questions.

<table>
<thead>
<tr>
<th>1</th>
<th>Strongly agree</th>
<th>2</th>
<th>Agree</th>
<th>3</th>
<th>Agree somewhat</th>
<th>4</th>
<th>Disagree somewhat</th>
<th>5</th>
<th>Disagree</th>
<th>6</th>
<th>Strongly disagree</th>
</tr>
</thead>
</table>

Your comments:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Q6. The questions in this questionnaire make sense to me when I think of current nursing practice.

<table>
<thead>
<tr>
<th>1</th>
<th>Strongly agree</th>
<th>2</th>
<th>Agree</th>
<th>3</th>
<th>Agree somewhat</th>
<th>4</th>
<th>Disagree somewhat</th>
<th>5</th>
<th>Disagree</th>
<th>6</th>
<th>Strongly disagree</th>
</tr>
</thead>
</table>

Your comments:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Q7. The layout/format of the questionnaire is good.

<table>
<thead>
<tr>
<th>1</th>
<th>Strongly agree</th>
<th>2</th>
<th>Agree</th>
<th>3</th>
<th>Agree somewhat</th>
<th>4</th>
<th>Disagree somewhat</th>
<th>5</th>
<th>Disagree</th>
<th>6</th>
<th>Strongly disagree</th>
</tr>
</thead>
</table>

Your comments:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Thank you very much for your cooperation. Your assistance is valuable to this study. Please do not write your name in this questionnaire. Upon completion, please place the questionnaire in the box or reply-paid envelope provided, and post it. It is important for you to retain the cover letter, which includes my contact number and your randomly assigned code number. Presenting your code number enables me to delete your responses should you decide to withdraw from the study at a later stage.
Table F1
Descriptive statistics: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>81.3%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Work status ≤ 35 hrs/week</td>
<td>56.3%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Work status &gt; 35 hrs/week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Mean (Std. deviation)</td>
<td>34.33 (5.91) years old</td>
<td></td>
</tr>
<tr>
<td>Years of experience Mean (Std. deviation)</td>
<td>13.31 (7.20) years</td>
<td></td>
</tr>
<tr>
<td>Educational qualifications Diploma</td>
<td>6.3%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Currently studying Yes</td>
<td>31.3%</td>
<td>68.8%</td>
</tr>
<tr>
<td>Specialty* Oncology Surgical Critical Mental Paediatrics Others</td>
<td>26.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Work position* Clinical Non clinical Both</td>
<td>66.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Workplace characteristics* Metropolitan public Metropolitan private Rural/public Rural/private Others</td>
<td>93.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Work condition* Permanent staff Non permanent</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Table F2

Descriptive statistics: Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Nurses’ self-concept</th>
<th>Public image of nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nurses’ image</strong></td>
<td>Mean (Std. Deviation)</td>
<td>Mean (Std. Deviation)</td>
</tr>
<tr>
<td>Interpersonal power</td>
<td>4.00 (.65)</td>
<td>3.63 (1.03)*</td>
</tr>
<tr>
<td>Interpersonal relations</td>
<td>4.77 (.74)</td>
<td>4.57 (1.06)</td>
</tr>
<tr>
<td>Intrapersonal ability</td>
<td>4.59 (.73)</td>
<td>4.16 (.94)</td>
</tr>
<tr>
<td>Total</td>
<td>4.42 (.60)</td>
<td>4.16 (.85)*</td>
</tr>
<tr>
<td><strong>Nursing role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision making</td>
<td>Mean (Std. Deviation)</td>
<td>Mean (Std. Deviation)</td>
</tr>
<tr>
<td>Total</td>
<td>5.16 (.59)</td>
<td>3.59 (.94)*</td>
</tr>
<tr>
<td>Patient care</td>
<td>3.94 (.30)</td>
<td>3.59 (.62)</td>
</tr>
<tr>
<td>Total</td>
<td>4.55 (.40)</td>
<td>3.62 (.60)*</td>
</tr>
<tr>
<td><strong>Work environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.10 (.58)*</td>
<td>4.10 (.87)*</td>
</tr>
<tr>
<td><strong>Collective self-esteem</strong></td>
<td>Mean (Std. Deviation)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.02 (.70)</td>
<td></td>
</tr>
<tr>
<td><strong>Job performance</strong></td>
<td>Mean (Std. Deviation)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.26 (.56)</td>
<td></td>
</tr>
<tr>
<td><strong>Turnover intention</strong></td>
<td>Mean (Std. Deviation)</td>
<td></td>
</tr>
<tr>
<td>Organisation</td>
<td>2.90 (1.13)</td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>2.25 (1.11)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.57 (.96)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* * indicates that these scores are summary statistics of N = 15. The rest are summary statistics of N = 16.

Table F3

Descriptive statistics: Evaluation of the questionnaire

<table>
<thead>
<tr>
<th>How long did it take to answer all the questions in the questionnaire?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20 mins</td>
<td>6</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
</tr>
<tr>
<td>20-30 mins</td>
<td>7</td>
<td>46.7</td>
<td>46.7</td>
<td>86.7</td>
</tr>
<tr>
<td>30-40 mins</td>
<td>2</td>
<td>13.3</td>
<td>13.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The questionnaire did not take too much time to complete,

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>1</td>
<td>6.7</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Agree</td>
<td>6</td>
<td>40.0</td>
<td>40.0</td>
<td>46.7</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>4</td>
<td>26.7</td>
<td>26.7</td>
<td>73.3</td>
</tr>
<tr>
<td>Disagree somewhat</td>
<td>3</td>
<td>20.0</td>
<td>20.0</td>
<td>93.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>6.7</td>
<td>6.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
The meanings of the questions are clear

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>13.3</td>
<td>13.3</td>
<td>13.3</td>
</tr>
<tr>
<td>Agree</td>
<td>6</td>
<td>40.0</td>
<td>40.0</td>
<td>53.3</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>2</td>
<td>13.3</td>
<td>13.3</td>
<td>66.7</td>
</tr>
<tr>
<td>Disagree somewhat</td>
<td>2</td>
<td>13.3</td>
<td>13.3</td>
<td>80.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>13.3</td>
<td>13.3</td>
<td>93.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>6.7</td>
<td>6.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The questions reflect what they are meant to measure.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>9</td>
<td>60.0</td>
<td>60.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>6</td>
<td>40.0</td>
<td>40.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

It was easy to answer the questions.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>13.3</td>
<td>15.4</td>
<td>15.4</td>
</tr>
<tr>
<td>Agree</td>
<td>7</td>
<td>46.7</td>
<td>53.8</td>
<td>69.2</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>3</td>
<td>20.0</td>
<td>23.1</td>
<td>92.3</td>
</tr>
<tr>
<td>Disagree somewhat</td>
<td>1</td>
<td>6.7</td>
<td>7.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>86.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Not responding</td>
<td>2</td>
<td>13.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The questions make sense to me when I think of current nursing practice.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>13.3</td>
<td>14.3</td>
<td>14.3</td>
</tr>
<tr>
<td>Agree</td>
<td>9</td>
<td>60.0</td>
<td>64.3</td>
<td>78.6</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>2</td>
<td>13.3</td>
<td>14.3</td>
<td>92.9</td>
</tr>
<tr>
<td>Disagree somewhat</td>
<td>1</td>
<td>6.7</td>
<td>7.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>93.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Not responding</td>
<td>1</td>
<td>6.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The layout/format of the questionnaire is good.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>3</td>
<td>20.0</td>
<td>21.4</td>
<td>21.4</td>
</tr>
<tr>
<td>Agree</td>
<td>7</td>
<td>46.7</td>
<td>50.0</td>
<td>71.4</td>
</tr>
<tr>
<td>Agree somewhat</td>
<td>4</td>
<td>26.7</td>
<td>28.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>93.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Not responding</td>
<td>1</td>
<td>6.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Cover letter for the quantitative study

Full project title: The relationship between images of nursing and person-environment fit
Principal researcher: Dr. Phillip Maude
Associate researcher: Associate Professor Elizabeth Manias
Student researcher: Ms. Miyuki Takase
Version: 2
Date: 
Code Number:

The School of Nursing
The University of Melbourne
723 Swanston Street, Carlton,
Victoria 3053

Dear colleague,

Introduction
You are invited to participate in a research study conducted by Miyuki Takase, a PhD candidate at
the School of Nursing, the University of Melbourne. This study will meet the full requirements for
a PhD degree.

Prospective participants will come from one of two hospitals or from a group of postgraduate
student nurses from one university in Melbourne. A total of 1100 nurses will be invited to
participate in this project.

Purpose of the Study
The purpose of this study is to: 1) compare your perception of the public image of nurses with
your self-image as a nurse, 2) examine how difference in the images are associated with
differences between your ideal and actual work characteristics, and 3) investigate how the
relationship between your ideal and actual work characteristics is related to your job performance
and intention to remain in a job. This study aims to clarify the relationship between these factors.
This will enable strategies to improve nursing practice to be developed.

Procedures
The procedure includes responding to a questionnaire, which may take approximately 20 to 30
minutes to complete. If you are interested in participating in this study, please complete the
questionnaire attached to this letter, place it into the provided reply-paid envelope upon
completion, then post it to the address indicated above (the address is printed on the reply-paid
envelope) by June 23rd, 2003. By returning the survey, it will be assumed that you have consented
to participate in this project.

In the case that you do not answer all the questions, the information you do provide will be used in
this study. However, it will be much appreciated if you answer all the questions.

Confidentiality of Records and Privacy
It should be emphasised that your privacy will be protected within the limitations of the law. Your
responses will be entered into a computer with a code and treated as group data. Hence, you will
not be identifiable in any report and publications. In addition, you are advised not to write your
name on either the questionnaire or the envelope. This will help to avoid the identification of you
as a respondent.
Your anonymous personal data will be kept in locked storage in the School of Nursing at the University of Melbourne and only the researchers will have access to it. Furthermore, your data will be only used for the purpose of this research project and will be destroyed seven years after the completion of this study.

Voluntary Participation
Your participation is voluntary. Therefore, it is your own choice whether or not to participate in this study. You may also withdraw from the study at any time you wish up until when the data has been analysed. If you decide not to participate or withdraw from the study, it will not in any way prejudice your position as an employee or a student. To enable me to delete your data from analysis, you will be asked to present your randomly assigned code number printed on this letter, as I am unable to identify your questionnaire. Hence, it is important to retain this letter.

Results of the project
The results of this study will appear in the student researcher’s PhD dissertation (the project title is printed at the top of this letter). The dissertation will be available in the library at the University of Melbourne. In addition, the results of the study may be published in nursing journals and/or presented in professional nursing conferences.

Possible Benefit for Participating in this Study
Although you may not directly benefit from participation in this study, the study findings are expected to provide suggestions for improving the nursing work environment. Thus, your participation is very important for this study.

Ethical Guidelines
This project will be carried out according to the National Statement on Ethical Conduct in Research Involving Humans (June, 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethical aspects of this research project have also been approved by the University of Melbourne Human Research Ethics Committee.

Information and Problems
If you require further information or if you have any problems concerning the project in which you are involved, you should contact the principal investigator. The principal investigator responsible for this project is Dr. Phillip Maude, a senior lecturer of the School of Nursing at the University of Melbourne, telephone 8344 0771 or the student researcher, Miyuki Takase on 8---. Alternatively, you may contact The University of Melbourne Human Research Ethics Committee on 8344 7507.

I look forward to your participation in this study.
Thank you for your consideration.

Yours sincerely,

Miyuki Takase
Appendix H: Brief descriptions of the cases deleted in the analysis

The following descriptions illustrate the nature of cases identified as outliers in the analysis. In addition the following cases, cases that did not respond to the demographic questions and cases that did not respond to an entire section (the questionnaire is divided by sections measuring each of the concepts) were deleted from the analysis, as these missing responses can not be replaced.

Hypothesis 1
Cases with very low responses to the Section concerning perceived public image of nurses, actual nursing roles and environmental supplies were deleted as univariate outliers. There were no multivariate outliers.

Hypothesis 3
Cases with very low responses to the Section concerning nurses’ self-concept, role conception and work values were deleted as univariate outliers. There were no multivariate outliers.

Hypothesis 4
Cases with very low responses to the variables under investigation were deleted as univariate outliers. Multivariate outlying cases tended to be nurses, who had not received a university education and held non-clinical positions.

Hypothesis 5 & 6
Cases with very low responses to the variables under investigation were deleted as univariate outliers. Multivariate outliers were identified as cases, which made very positive responses on personal variables while making relatively positive responses on the environmental variables.

Hypothesis 7
Cases with very low responses to the variables under investigation were deleted as univariate outliers. Multivariate outliers tended to be nurses who worked in high dependency care area, but had not received university education.
Hypothesis 8

Cases with very low responses to the variables under investigation were deleted as univariate outliers. As for the analysis testing an impact of the image fit, cases, which rated both/either the perceived public image and/or nurses’ self-concept very negatively, were identified as multivariate outliers. Regarding the analysis of testing an impact of the role fit, multivariate outliers were identified as cases, which made very positive responses to both nurses’ role conception and their actual roles, or which made very low response to their role conception while making very positive response to their actual roles. As to the impact of the value-supply fit, the cases, which rated both their work values and their perception of the environmental supplies either very positively or negatively tended to be multivariate outliers. Multivariate outliers also included cases, which made very low responses to the Section concerning work values while making very high response to the environmental supplies Section.

Hypothesis 9

Cases with very low responses on the variables under investigation were deleted as univariate outliers. As for the multivariate outliers in testing the impact of the image fit, cases that made very negative responses on both nurses’ self-concept and the perceived public image of nurses tended to be identified as the outliers. The multivariate outliers also included cases, which made very negative responses concerning their public image while making positive responses concerning their self-concept. With reference to the analysis in testing the impact of the role fit, cases that made very negative responses on both their role conception and the actual roles, or cases that made very negative responses on the role conception compared with high responses on the actual roles tended to be identified as multivariate outliers. In testing the impact of the value-supply fit, multivariate outliers tended to be the cases, which rated both their work values and the environmental supplies either very positively or negatively, or the cases, which made very low responses on the environmental supplies while reporting positive work values.
Re-analysed models

Regarding the relationship between overall role and job performance, cases, which show a combination of very low actual role scores and very high role conception scores or a combination of very high actual role and role conception scores, were identified as multivariate outliers. Cases with high scores on the quadratic term of the actual roles were identified as univariate outliers. With reference to the relationship between task delegation and criteria-based job performance, no outliers were identified except for one discrepant case. As for the relationship between task delegation and professional competency, no cases were deleted. With regard to the relationship between the value-supply scores and nurses’ overall job performance, cases, which showed either very high or low scores on the work values and the environmental supplies, were identified as multivariate outliers. In addition, cases with low scores on the work values were identified as univariate outliers.
Appendix I: Results of the analysis with all the usable cases included

Please note that cases with missing values are not included in the following results.

Hypothesis 1

Table I1

Summary results of the analysis examining the impact of the perceived public image on nursing practice

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dependent variables</th>
<th>Actual roles</th>
<th>Environmental supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cum. $R^2$</td>
<td>$R^2$ change $(B)$</td>
</tr>
<tr>
<td>Predictors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td>.08**</td>
<td>.08**</td>
</tr>
<tr>
<td>Public image</td>
<td></td>
<td>.11**</td>
<td>.02**</td>
</tr>
</tbody>
</table>

Note. 1. * $p < .05$, ** $p < .01$. 2. $N = 328 – 330$.

Hypothesis 2 involved t-test and no outlying cases were deleted in this analysis. Therefore, the results with all available cases included are reported in the Chapter 6.

Hypothesis 3

Table I2

Summary results of the analysis examining the impact of nurses’ self-concept on their professional needs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dependent variables</th>
<th>Role conception</th>
<th>Work values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cum. $R^2$</td>
<td>$R^2$ change $(B)$</td>
</tr>
<tr>
<td>Predictors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td>.05</td>
<td>.05</td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td></td>
<td>.17**</td>
<td>.13**</td>
</tr>
</tbody>
</table>

Note. 1. * $p < .05$, ** $p < .01$. 2. $N = 329 – 330$. 
Hypothesis 4

Table I3

Summary results of the analysis examining the PEO fit by collective self-esteem

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Predictor x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>.22**</td>
<td>.24**</td>
<td>.02*</td>
</tr>
<tr>
<td>Nurses’ role conception</td>
<td>.20**</td>
<td>.20**</td>
<td>.00</td>
</tr>
<tr>
<td>Nurses’ work values</td>
<td>.26**#3</td>
<td>.27**</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of their public image, actual roles and the environmental supplies. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 195$. 5. Age was removed from the demographic variables due to multicollinearity.

Hypothesis 5 & 6

Table I4

Summary results of the analysis examining the PEO fit by the length of clinical experience

<table>
<thead>
<tr>
<th>Predictors</th>
<th>First analysis</th>
<th>Second analysis</th>
<th>Group difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 4 yrs.</td>
<td>≥ 13 yrs.</td>
<td></td>
</tr>
<tr>
<td>Public image※1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.03</td>
<td>.03</td>
<td>.06</td>
</tr>
<tr>
<td>Step 2</td>
<td>.20** (0.36**#1)</td>
<td>.17**</td>
<td>.12** (0.19**#1)</td>
</tr>
<tr>
<td>Actual roles※2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.05</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td>Step 2</td>
<td>.15** (0.24**#1)</td>
<td>.10**</td>
<td>.17</td>
</tr>
<tr>
<td>Environmental supplies※3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.08</td>
<td>.08</td>
<td>.02</td>
</tr>
<tr>
<td>Step 2</td>
<td>.21** (0.36**#1)</td>
<td>.13**</td>
<td>.27** (0.42**#1)</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variables are ※1: nurses’ self-concept, ※2: nurses’ role conception, and ※3: nurses’ work values. 2. Only the coefficients of the variable entered in the second step are indicated. ※1 indicates the coefficient on the environmental factor (main predictor). ※2 indicates the coefficient on the environmental factor X group code by the length of experience. 3. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 106 - 108$ for each group, and $n = 214 - 216$ for combined data.
Hypothesis 7

Table I5

Summary results of the analysis examining the PEO fit by the clinical area

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Cumulative $R^2$</th>
<th>$R^2$ Change</th>
<th>Predictor x Group ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td>Nurses’ self-concept</td>
<td>.18**</td>
<td>.19**</td>
<td>.00*</td>
</tr>
<tr>
<td>Nurses’ role conception</td>
<td>.14**</td>
<td>.15**</td>
<td>.00</td>
</tr>
<tr>
<td>Nurses’ work values</td>
<td>.17**</td>
<td>.17**</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. 1. The dependent variable is nurses’ perception of their public image, actual roles and the environmental supplies. 2. Only the coefficients of the variable entered in the second step are indicated. 3. Significance was controlled by the sequential Bonferroni procedure. * indicates $p < .05$ and ** indicates $p < .01$. 4. $n = 203 – 205$. 5. Age was removed from the demographic variables due to multicollinearity. In addition to age, # indicates that university education was removed due to multicollinearity.

Hypothesis 8

Table I6

Unconstrained models based on the PEO fit and job performance.

<table>
<thead>
<tr>
<th></th>
<th>Unconstrained monotonic model ($B$)</th>
<th>Unconstrained quadratic model ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>Image fit</td>
<td>0.05</td>
<td>0.54**</td>
</tr>
<tr>
<td>Role Fit</td>
<td>0.08*</td>
<td>0.32**</td>
</tr>
<tr>
<td>Value-supply fit</td>
<td>0.12*</td>
<td>0.25**</td>
</tr>
</tbody>
</table>

Note. 1. * $p < .05$, ** $p < .01$. 2. $N = 343 – 345$. 3. Constant is omitted in this table. 4. The dependent variable is job performance. 5. # indicates that there is a significant increase in $R^2$ when the quadratic terms are added to the unconstrained monotonic model.
Hypothesis 9

Table I7
Unconstrained models based on the PEO fit and turnover intention.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Unconstrained monotonic model ($B$)</th>
<th>Unconstrained quadratic model ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>P</td>
</tr>
<tr>
<td>Image fit</td>
<td>-0.30**</td>
<td>-0.44**</td>
</tr>
<tr>
<td>Role Fit</td>
<td>-0.46**</td>
<td>-0.11</td>
</tr>
<tr>
<td>Value-supply fit</td>
<td>-0.78**</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note. 1. * $p < .05$, ** $p < .01$. 2. $N = 344 – 346$. 3. Constant is omitted in this table. 4. The dependent variable is turnover intention. 5. * indicates that there is a significant increase in $R^2$ when the quadratic terms are added to the unconstrained monotonic model.

Re-analysed models

Table I8
Results of re-analyse models

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Constant</th>
<th>E</th>
<th>P</th>
<th>$E^2$</th>
<th>$R^2$</th>
<th>F-change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall role &amp; Job performance</td>
<td>4.66**</td>
<td>0.17**</td>
<td>0.27**</td>
<td>0.07</td>
<td>.11**</td>
<td>$F(3, 341) = 4.93**$</td>
</tr>
<tr>
<td>Task delegation &amp; criteria-based performance</td>
<td>4.95**</td>
<td>0.09**</td>
<td>0.07**</td>
<td>0.06**</td>
<td>.10**</td>
<td>$F(3.341) = 3.82**$</td>
</tr>
<tr>
<td>Overall value-supply &amp; job performance</td>
<td>4.67**</td>
<td>0.29**</td>
<td>0.22**</td>
<td>0.19**</td>
<td>.14**</td>
<td>$F(3, 339) = 6.46**$</td>
</tr>
</tbody>
</table>

Note. 1. The abbreviations in the first row are as follows: E- Environmental factor and P- Nurses’ personal factor in the respected relationships. 2. $N$ ranges from 343 to 345. 3. Unstandardised coefficients ($B$) are presented. 4. * $p < .05$, ** $p < .01$. 
Appendix J: Invitation to focus group (flier)

**Full project title:** The relationship between images of nursing and person-environment fit  
**Principal researcher:** Dr. Phillip Maude  
**Associate researcher:** Associate Professor Elizabeth Manias  
**Student researchers:** Ms. Miyuki Takase  
**Version:** 3  
**Date:**

The School of Nursing  
The University of Melbourne  
723 Swanston Street, Carlton,  
Victoria 3053

Dear colleagues,

**Introduction**  
You are invited to participate in the second stage of a research study conducted by Miyuki Takase, a PhD candidate at the School of Nursing, the University of Melbourne. This study will meet the full requirements for a PhD degree.

**Purpose of the Study**  
The purpose of this study is to: 1) compare your perception of the public image of nurses with your self-image as a nurse, 2) examine how difference in the images are associated with differences between your ideal and actual work characteristics, and 3) investigate how the relationship between your ideal and actual work characteristics is related to your job performance and intention to remain in a job. This study aims to clarify the relationship between these factors. This will enable strategies to improve nursing practice to be developed.

You should have already participated in the first part of this study that involved answering a questionnaire. In addition to the questionnaire, I am interested in interviewing nurses to help me understand the results from the questionnaire more deeply and to develop constructive measures to improve nursing practice. A total of ten nurses, who have completed the questionnaire distributed in -month--, will be invited to participate in the second stage of the study.

**Procedures**  
The second stage involves participation in a focus group. The focus group will be held in a meeting room at the School of Nursing at the University of Melbourne. The focus group will take approximately one to one and a half hours and be audio-taped. You will also be asked to check the transcription of the group, which will be sent to you at a later date to allow you to confirm or modify your responses in the focus group. Travel expenses (based on a daily public transport ticket price plus parking fees for those travelling by car) incurred to participate in this focus group will be returned to you by the researcher.

If you are interested in participating in the focus group, please contact the student researcher, whose contact details are provided below by ---date---.

Name of the student researcher: Miyuki Takase  
Contact address: The School of Nursing, The University of Melbourne, 723 Swanston Street, Carlton, Victoria 3053  
Telephone number: *******  
Contact time: Monday to Friday, 10:00 to 18:00
Confidentiality of Records and Privacy
It should be emphasised that your privacy will be protected within the limitations of the law. Your responses will be recorded with your preferred pseudonym, hence you will not be identifiable in the study report. Your personal data will be kept in a locked filing cabinet in the School of Nursing at the University of Melbourne and only the researchers will have access to it. Furthermore, your data will be only used for the purpose of this research project and will be destroyed seven years after the completion of this study.

Voluntary Participation
Your participation is voluntary. Therefore, it is your own choice whether or not to participate in the focus group. You may withdraw from the study at any time you wish until when the data has been analysed. Withdrawing from the study will not in any way prejudice your position as an employee or a student.

Results of the project
You will be asked to read the focus group transcription and allowed to make any changes regarding your responses. The results of this study will appear in the student researcher’s PhD dissertation (the project title is printed at the top of this letter). The dissertation will be available in the library at the University of Melbourne. In addition, the results of the study may be published in nursing journals and/or presented in professional nursing conferences.

Possible Risks
There are no risks associated with participating in this study. In the unlikely event that participating in the focus group causes you discomfort, you can choose not to answer the questions or withdraw from the focus group. If emotional discomfort or distress is caused by participation in the focus group, you will be asked to contact the researchers immediately, so that an appropriate course of action (such as referral to a GP or a professional counsellor) can be made.

Possible Benefit for Participating in this Study
Although you may not directly benefit from participation in this study, the study findings are expected to provide suggestions for improving the nursing work environment. Thus, your participation is very important for this study.

Ethical Guidelines
This project will be carried out according to the National Statement on Ethical Conduct in Research Involving Humans (June, 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies. The ethical aspects of this research project have also been approved by the Human Research Ethics Committee of ---institution’s name---.

Information and Problems
If you require further information or if you have any problems concerning the project in which you are involved, you should contact the principal investigator. The principal investigator responsible for this project is Dr. Phillip Maude, a senior lecturer of the School of Nursing at the University of Melbourne, telephone 8344 0771 or the student researcher, Miyuki Takase on -------. Alternatively, you may contact The University of Melbourne Human Research Ethics Committee on 8344 7507.

I look forward to your participation in the focus group.
Thank you for your consideration.
Yours sincerely,

Miyuki Takase
Appendix K: Participant information and consent form for focus group

<table>
<thead>
<tr>
<th>Full project title:</th>
<th>The relationship between images of nursing and person-environment fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal researcher:</td>
<td>Dr. Phillip Maude</td>
</tr>
<tr>
<td>Associate researcher:</td>
<td>Associate Professor Elizabeth Manias</td>
</tr>
<tr>
<td>Student researchers:</td>
<td>Ms. Miyuki Takase</td>
</tr>
<tr>
<td>Version:</td>
<td>3</td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

Introduction
You are invited to participate in the second stage of a research study conducted by Miyuki Takase, a PhD candidate at the School of Nursing, the University of Melbourne. This study will meet the full requirements for a PhD degree.

Purpose of the Study
The purpose of this study is to: 1) compare your perception of the public image of nurses with your self-image as a nurse, 2) examine how difference in the images are associated with differences between your ideal and actual work characteristics, and 3) investigate how the relationship between your ideal and actual work characteristics is related to your job performance and intention to remain in a job. This study aims to clarify the relationship between these factors. This will enable strategies to improve nursing practice to be developed.

You should have already participated in the first part of this study that involved answering a questionnaire. In addition to the questionnaire, I am interested in interviewing nurses to help me understand the results from the questionnaire more deeply and to develop constructive measures to improve nursing practice. A total of ten nurses, who have completed the questionnaire distributed in April and May, will be invited to participate in the second stage of the study.

Procedures
The second stage involves participation in a focus group. The focus group will be held in a meeting room at the School of Nursing at the University of Melbourne. The focus group will take approximately one to one and a half hours and be audio-taped. You will also be asked to check the transcription of the group, which will be sent to you at a later date to allow you to confirm or modify your responses in the focus group. Travel expenses (based on a daily public transport ticket price plus parking fees for those travelling by car) incurred to participate in this focus group will be returned to you by the researcher.

Confidentiality of Records and Privacy
It should be emphasised that your privacy will be protected within the limitations of the law. Your responses will be recorded with your preferred pseudonym, hence you will not be identifiable in the study report. Your personal data will be kept in a locked filing cabinet in the School of Nursing at the University of Melbourne and only the researchers will have access to it. Furthermore, your data will be only used for the purpose of this research project and will be destroyed seven years after the completion of this study.

Voluntary Participation
Your participation is voluntary. Therefore, it is your own choice whether or not to participate in the focus group. You may withdraw from the study at any time you wish up until when the data has been analysed. Withdrawing from the study will not in any way prejudice your position as an employee or a student.
Results of the project
You will be asked to read the focus group transcription and allowed to make any changes regarding your responses. The results of this study will appear in the student researcher’s PhD dissertation (the project title is printed at the top of this letter). The dissertation will be available in the library at the University of Melbourne. In addition, the results of the study may be published in nursing journals and/or presented in professional nursing conferences.

Possible Risks
There are no risks associated with participating in this study. In the unlikely event that participating in the focus group causes you discomfort, you can choose not to answer the questions or withdraw from the focus group. If emotional discomfort or distress is caused by participation in the focus group, you will be asked to contact the researchers immediately, so that an appropriate course of action (such as referral to a GP or a professional counsellor) can be made.

Possible Benefit for Participating in this Study
Although you may not directly benefit from participation in this study, the study findings are expected to provide suggestions for improving the nursing work environment. Thus, your participation is very important for this study.

Ethical Guidelines
This project will be carried out according to the National Statement on Ethical Conduct in Research Involving Humans (June, 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies. The ethical aspects of this research project have also been approved by the University of Melbourne Human Research Ethics Committee.

Information and Problems
If you require further information or if you have any problems concerning the project in which you are involved, you should contact the principal investigator. The principal investigator responsible for this project is Dr. Phillip Maude, a senior lecturer of the School of Nursing at the University of Melbourne, telephone 8344 0771 or the student researcher, Miyuki Takase on -------- --------. Alternatively, you may contact The University of Melbourne Human Research Ethics Committee on 8344 7507.
PART ONE

I certify that I have provided the participant with adequate information on the research procedure which, according to my assessment of the person’s level of comprehension, he/she seemed fully to understand. I declare that the below-named person freely gave consent to take part in this research study and investigation.

Investigator’s signature: __________________________ Date: / /2003

PART TWO

Ms. Miyuki Takase has explained the purpose and nature of the research, the research methods and procedures and risks and discomfort associated with them. I am willing to take part in this research and I consent to all of the procedures, and to the risks associated with them that have been explained to me. I understand that I am free to withdraw from this study at any time without penalty up until the time that the data has been analysed.

Dated the ________________ day of ________________ 2003

Signed: ____________________________ (Participant)

Witness: ____________________________
Appendix L: Demographic questionnaire used in the focus group

When you sign the consent form, please fill in this form.

Q1. Please print you name in full.

Q2. Please choose a pseudonym and print it below. Please use this in the focus group.

Q3. Please print your contact address or E-mail. A copy of the focus group transcription will be sent to you.

Address/E-mail:

Q4. Please state the name of the hospital where you are currently employed.

Q5. Please indicate your gender.

| 1 | Female | 2 | Male |

Q6. Please indicate how many hours per week you work as a nurse.

| 1 | ≥ 35 hours/week | 2 | < 35 hours/week |

Q7. Please indicate your age in years.

Years old

Q8. Please indicate the number of years you have actually been completed as a registered nurse. If you have less than one year’s experience, please specify by the number of months.

Years Or Months

Q9. Please specify all your educational qualifications (Please circle corresponding numbers of qualifications you have already obtained).

<table>
<thead>
<tr>
<th>1</th>
<th>Diploma</th>
<th>2</th>
<th>Degree</th>
<th>3</th>
<th>Honour’s degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Postgraduate certificate</td>
<td>5</td>
<td>Postgraduate diploma</td>
<td>6</td>
<td>Master by coursework</td>
</tr>
<tr>
<td>7</td>
<td>Master by research</td>
<td>8</td>
<td>Professional doctorate</td>
<td>9</td>
<td>PhD</td>
</tr>
<tr>
<td>10</td>
<td>Others (Please specify):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q10. Are you currently undertaking a postgraduation course?

| 1 | Yes (Please specify): | 2 | No |
Q11. Please indicate your current speciality.

<table>
<thead>
<tr>
<th></th>
<th>Oncology</th>
<th>Medical</th>
<th>Surgical</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Critical (Emergency or ICU)</td>
<td>Psychiatric/Mental health</td>
<td>Paediatrics</td>
</tr>
<tr>
<td>7</td>
<td>Gerontology</td>
<td>Palliative care</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Other (Please specify):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q12. Please indicate your position.

<table>
<thead>
<tr>
<th></th>
<th>Clinical</th>
<th>Non-clinical</th>
<th>Other (Please specify):</th>
</tr>
</thead>
</table>

Q13. Please indicate the characteristics of your current work place.

<table>
<thead>
<tr>
<th></th>
<th>Metropolitan/public hospital</th>
<th>Metropolitan/private hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Rural/public hospital</td>
<td>Rural/private hospital</td>
</tr>
<tr>
<td>5</td>
<td>Other than a hospital (Please specify):</td>
<td></td>
</tr>
</tbody>
</table>

Q14. Please indicate your working condition.

<table>
<thead>
<tr>
<th></th>
<th>Permanent staff*</th>
<th>Either casual, bank/pooled or agency staff*</th>
</tr>
</thead>
</table>

This is the end of the demographic questionnaire. Thank you for participating in this study.
Appendix M: The final factor analysis with the reversed score in factor II

Table M1

Final factor analysis of the Nurses’ Role Conception Scale with the reversed scores in the factor II

<table>
<thead>
<tr>
<th>Instrument items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor I</td>
</tr>
<tr>
<td>Policy on work conditions</td>
<td>.77</td>
</tr>
<tr>
<td>Discharge decision</td>
<td>.71</td>
</tr>
<tr>
<td>Provide emotional support</td>
<td>.63</td>
</tr>
<tr>
<td>Policy on hospital support (Reversed)</td>
<td>.60</td>
</tr>
<tr>
<td>Develop nursing careplan</td>
<td>.58</td>
</tr>
<tr>
<td>Initiate referral</td>
<td>.53</td>
</tr>
<tr>
<td>Patient education (Reversed)</td>
<td>.52</td>
</tr>
<tr>
<td>Follow Dr's order (Reversed)</td>
<td>.42</td>
</tr>
<tr>
<td>Delegate patient hygiene care</td>
<td>.77</td>
</tr>
<tr>
<td>Delegate care for daily activities</td>
<td>.65</td>
</tr>
<tr>
<td>Perform technical procedures</td>
<td>-</td>
</tr>
<tr>
<td>Direct care</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. The items belong to the factor in which underlined loadings are shown. The score on negatively worded items were reversed.
Appendix N: The means and the standard deviations of the variables and correlation analysis

Table N1.

The means and the standard deviations of the variables and their correlation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean/SD</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nurse image</td>
<td>4.96/0.51</td>
<td></td>
</tr>
<tr>
<td>2. Nurse image F1</td>
<td>4.88/0.55</td>
<td></td>
</tr>
<tr>
<td>3. Nurse image F2</td>
<td>5.16/0.66</td>
<td></td>
</tr>
<tr>
<td>4. Public image</td>
<td>4.48/0.68</td>
<td></td>
</tr>
<tr>
<td>5. Public image F1</td>
<td>4.17/0.79</td>
<td></td>
</tr>
<tr>
<td>6. Public image F2</td>
<td>5.22/0.70</td>
<td></td>
</tr>
<tr>
<td>7. Role conception</td>
<td>5.02/0.54</td>
<td></td>
</tr>
<tr>
<td>8. Role conception F1</td>
<td>5.13/0.55</td>
<td></td>
</tr>
<tr>
<td>9. Role conception F2</td>
<td>4.60/0.25</td>
<td></td>
</tr>
<tr>
<td>10. Actual role</td>
<td>4.01/0.81</td>
<td></td>
</tr>
<tr>
<td>11. Actual role F1</td>
<td>4.04/0.84</td>
<td></td>
</tr>
<tr>
<td>12. Actual role F2</td>
<td>3.88/1.62</td>
<td></td>
</tr>
<tr>
<td>13. Work values</td>
<td>4.89/0.59</td>
<td></td>
</tr>
<tr>
<td>14. Work values F1</td>
<td>4.83/0.69</td>
<td></td>
</tr>
<tr>
<td>15. Work values F2</td>
<td>5.21/0.66</td>
<td></td>
</tr>
<tr>
<td>16. Work values F3</td>
<td>4.75/0.74</td>
<td></td>
</tr>
<tr>
<td>17. Environmental supplies</td>
<td>4.23/0.69</td>
<td></td>
</tr>
<tr>
<td>18. Environmental supplies F1</td>
<td>3.99/0.80</td>
<td></td>
</tr>
<tr>
<td>19. Environmental supplies F2</td>
<td>4.82/0.76</td>
<td></td>
</tr>
<tr>
<td>20. Environmental supplies F3</td>
<td>4.39/0.83</td>
<td></td>
</tr>
<tr>
<td>21. Collective self-esteem</td>
<td>5.19/0.67</td>
<td></td>
</tr>
<tr>
<td>22. Job performance</td>
<td>4.79/0.63</td>
<td></td>
</tr>
<tr>
<td>23. Job performance F1</td>
<td>5.09/0.58</td>
<td></td>
</tr>
<tr>
<td>24. Job performance F2</td>
<td>4.38/1.01</td>
<td></td>
</tr>
<tr>
<td>25. Turnover intention</td>
<td>2.37/1.06</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1. ** Correlation is significant at the .01 level (Two-tailed). 2. * Correlation is significant at the .05 level (Two-tailed). 3. N = 342 – 343.
Appendix O: The results of response surface analysis on the selected relationships

Table O1

Results of response surface analysis

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Stationary point</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X₀</td>
<td>Y₀</td>
<td>P₁₀</td>
</tr>
<tr>
<td>1. Overall role fit &amp; job performance</td>
<td>-0.65</td>
<td>0.35</td>
<td>-0.46</td>
</tr>
<tr>
<td>2. Task delegation fit &amp; criteria-based job</td>
<td>0.03</td>
<td>0.15</td>
<td>0.17</td>
</tr>
<tr>
<td>performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Task delegation fit &amp; professional competency</td>
<td>-0.12</td>
<td>3.63</td>
<td>3.62</td>
</tr>
<tr>
<td>4. Overall value-supply fit &amp; job performance</td>
<td>-0.02</td>
<td>-0.78</td>
<td>-0.78</td>
</tr>
</tbody>
</table>

Note. ¹ Columns labelled X₀ and Y₀ contain stationary point coordinates in the xy plane.

² Columns labelled P₁₀ and P₁₁ contain intercepts and slopes, respectively, of the first principal axis. ³ Columns labelled P₂₀ and P₂₁ contain intercepts and slopes, respectively, of the second principal axis. ⁴ Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples. * indicates that the value is statistically significant from 0 at alpha level of .05. #1 indicates that the value is statistically different from 1, and #2 indicates that the value is statistically different from –1.

Continued to the next table

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Y = X</th>
<th>Y = −X</th>
<th>1st principal axis</th>
<th>2nd principal axis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aₓ</td>
<td>aₓ²</td>
<td>aₓ</td>
<td>aₓ²</td>
</tr>
<tr>
<td>1</td>
<td>0.01</td>
<td>0.16</td>
<td>0.52</td>
<td>0.53*</td>
</tr>
<tr>
<td>2</td>
<td>-0.01</td>
<td>0.08*</td>
<td>0.01</td>
<td>0.13*</td>
</tr>
<tr>
<td>3</td>
<td>-0.04</td>
<td>0.10*</td>
<td>0.14</td>
<td>0.12</td>
</tr>
<tr>
<td>4</td>
<td>0.07</td>
<td>0.25*</td>
<td>-0.17</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Note. ¹ For each line (Y = X, Y = −X, 1st principal axis, second principal axis), aₓ represents the curvature of the surface along the line, and aₓ represents the slope of the surface along the line at X = 0. ² Significance levels are based on 95% confidence intervals constructed from coefficients from 10,000 bootstrap samples.
Figures illustrating the relationship between the overall role fit and nurses’ perception of their job performance are presented below.

**Figure O1.** 3D and 2D figures illustrating the relationship between the overall role fit and job performance

*Note.* In 2D figure, Axis E (y-axis) represents scores of the actual roles, whereas Axis P (x-axis) represents the scores of the nurses’ role conception. The Y = X line is represented as a straight line, and the Y = –X line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

The stationary point on this surface was located at X = –0.65 and Y = 0.35 in the xy plane. The 95% confidence intervals of both coordinates included 0, which supported the hypothesised model. The first principal axis was located at Y = –0.046 – 1.24X in the xy plane. As shown in Table O1, the confidence interval of the intercept includes 0 and the quantity of $-P_{10}/(1 + P_{11})$ equated to 1.93, $p > .05$, suggesting that there was no lateral shift of the first principal axis from the Y = X line. The confidence interval of the coefficient on X, however, did not include 1, indicating that the first principal axis was rotated off the Y = X line. Indeed, this axis was running close to the Y = –X line, as shown in Figure L1 and the confidence interval of the coefficient included –1. The second principal axis was located at Y = 0.88 + 0.81X in the xy plane, which was parallel to the Y = X line instead of the Y = –X line as hypothesised. This was illustrated by the confidence interval of the coefficient on X that excluded –1, but included 1. The locations of the two principal axes rejected the hypothesis that the relationship between the role fit and job performance would be illustrated by the dome-shaped optimal model.
Slopes of the surfaces of the interest also rejected the hypothesised model. The slope of the surface along the $Y = X$ was flat ($a_x = 0.01$, $p > .05$) and linear ($a_x^2 = 0.16$, $p > .05$), supporting the hypothesised model, whereas the slope of the surface along the $Y = -X$ line showed an upward curve ($a_x^2 = 0.53$, $p < .05$) as opposed to a downward curve illustrated in the dome-shaped optimal model. These findings suggest that nurses’ perception of their overall job performance is steady when they perceived congruence between their expectations of their roles and the actual roles they play in practice. When they perceived incongruence between them, they tended to evaluate their job performance positively. As nurses’ perception of the incongruence became greater, their job performance evaluation tended to become more positive. There were no nurses whose mean score of role conception dropped below the scale midpoint, suggesting that all the nurses in this study had a high desire to engage in a range of professional roles. Thus, it is unlikely that there are nurses who have low role conception and who perceive they use many of their skills. But, the results suggest that nurses, who have high expectations of their role and who perceive they are not fulfilling their roles, tend to evaluate their job performance positively.

In addition to the above information, the results of the response surface analysis revealed that nurses who perceived their actual roles slightly below their expectations tended to evaluate their job performance lower than others. This was illustrated by the location and the surface of the second principal axis. As shown in Figure O1, the surface went upward along the second principal axis where nurses’ role conception was slightly higher than their perception of the actual roles. On the other hand, the analysis revealed that nurses who perceived themselves using too many or too few skills compared with their desires tended to evaluate their job performance very positively. This phenomenon was illustrated by the location and the surface of the first principal axis. The location of the first principal axis illustrated the points, at which nurses’ actual roles deviated from their expectation to a greater degree, than the points of a perfect misfit illustrated by the $Y = -X$ line. This equation illustrates the degree of agreement on one variable corresponded to the degree of the disagreement on the other. The surface along the first principal axis showed an upward curve ($a_x^2 = 0.67$, $p < .05$), indicating that a greater deviance leads to more positive evaluation of job performance. Considering the facts that the coefficient on $X$ in the first principal axis was greater than that on $X$ in the $Y = -X$ line and that there were not any nurses who reported low role conception in this study,
it can be articulated that nurses, who perform far fewer roles than they expected, tend to see themselves as greater performers.

![Diagram showing the relationship between task delegation fit and criteria-based job performance](image)

**Figure O2.** 3D and 2D figures illustrating the relationship between the task delegation fit and criteria-based job performance

*Note.* In 2D figure, Axis E (y-axis) represents scores of the actual task delegation opportunities, whereas Axis P (x-axis) represents the scores of the nurses’ need for the task delegation. The Y = X line is represented as a straight line, and the Y = – X line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

Consistent with the above relationships, the surface of the relationship between the task delegation fit and nurses’ evaluation of their job performance based on the organisational criteria was bowl-shaped (see Figure O2). The stationary point was located at X = 0.03 and Y = 0.15 in the xy plane, which were not significantly different from 0. The first principal axis was rotated off the Y = X line. The confidence interval of the coefficient on X of this axis included –1. Thus, the first principal axis was located along the Y = – X line. This supports the bowl-shaped model as opposed to the hypothesised dome-shaped optimal model. However, the second principal axis was not rotated off the Y = – X line, supporting the hypothesised model. There was no lateral shift of the first principal axis from the Y = X line (– P10/ (1 + P11) = 0.28, p > .05).

The slopes of the surfaces along the Y = X and Y = – X lines were not significantly different from 0. The curvatures of the surface along the both lines, however, were both positive and different from 0, indicating that the surfaces were curved upwards. This illustrates that nurses’ evaluation of their job performance was lowest when both their task delegation needs and the actual opportunities were neither
high nor low. Their evaluation tended to improve when they had high needs and many opportunities as well as when they had low needs and few opportunities. Additionally, the scores on job performance increased when nurses perceived a greater misfit between their needs and actual opportunities (i.e., when they had high needs while having fewer opportunities as well as when they had low needs while having more opportunities). The surface along the first principal axis also showed an upward curve ($\alpha_1 = 0.08, p < .05$), which was not as steep as the surface along the $Y = -X$ line ($\alpha_2 = 0.13, p < .05$). Thus, it can be suggested that too high or too low task delegation needs compared with actual practice also contributes to nurses’ judgement of their job performance. But, its effect is less than the impact the perfect misfit has on their judgement.

Figure O3 depicts the relationship between the fit in task delegation and nurses’ perception of their professional competency.

![Figure O3](image)

**Figure O3.** 3D and 2D figures illustrating the relationship between the task delegation fit and professional competency

**Note.** In 2D figure, Axis E (y-axis) represents scores of the actual task delegation opportunities, whereas Axis P (x-axis) represents the scores of the nurses’ need for the task delegation. The $Y = X$ line is represented as a straight line, and the $Y = -X$ line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

As shown in Table O1, the stationary point in the xy plane was located outside the scale range. Nevertheless, the 95% confidence intervals of both $X_0$ and $Y_0$ included 0, indicating that there was no significant shift of the stationary point from hypothesised point of $X = 0$ and $Y = 0$. This supports the hypothesised model. The first principal axis was also located outside the scale range, therefore it is not shown.
in Figure O3. On the other hand, the second principal axis was located within the scale range. The confidence interval of $P_{20}$ included 0 and that of $P_{21}$ included −1, which supported the hypothesis. However, the range of the confidence interval was so wide that it also included +1. This was not surprising, given that the second principal axis was almost parallel to the $X = 0$ line (see the contour plot in Figure O3). Despite the fact that the first principal axis was located outside the scale ranges, the statistics showed that there was no lateral shift of the first principal axis from the $Y = X$ line ($-P_{10}/(1 + P_{11}) = 3.79, p > .05$).

The surface along the $Y = X$ line was flat ($a_x = -0.04, p > .05$), but it was curved upward ($a_x^2 = 0.10, p < .05$). In contrast, the surface along the $Y = -X$ line was flat and linear, as indicated by the slope ($a_x = 0.14, p > .05$) and the curvature of the surface ($a_x^2 = 0.12, p > .05$). These results contradicted the hypothesised dome-shaped optimal model. The upward curve along the $Y = X$ line indicated that nurses’ perception of their professional competency became positive when their task delegation needs and the actual task delegation opportunities were high. The positive evaluation of their professional competency also occurred when they had low task delegation needs and when they did not delegate many of their tasks to others. Compared with the former, the latter may be less likely to happen in practice, as 24% of nurses rated their task delegation needs below the midpoint of the scale. Moreover, 33.5% of nurses reported they did not delegate many of their tasks to others. However, as illustrated by the slight upward slope along the second principal axis ($a_x = 1.49, p > .05$), their perception of the professional competency became slightly more positive when they had low needs and few actual occasions for task delegation than when they had high needs and many occasions for task delegation. The upward curve along the $Y = X$ line also suggests that nurses’ perception of their professional competency is relatively low when they have neither high or low task delegation needs and see themselves having neither many or few occasions for task delegation. These results suggest that the different types of the task delegation fit contribute differently to nurses’ evaluation of their professional competency.

In contrast, the flat surface along the $Y = -X$ line showed that task delegation misfit does not contribute to the difference in nurses’ perception of their professional competency. This contradicted the assumption of the PEO fit model.
Figure O4. 3D and 2D figures illustrating the relationship between the overall value-supply fit and job performance.

Note. In 2D figure, Axis E (y-axis) represents scores of the perceived environmental supplies, whereas Axis P (x-axis) represents the scores of the nurses’ work values. The Y = X line is represented as a straight line, and the Y = –X line is represented as a dotted line. The thicker line indicates the 1st principal axis, while the thicker dotted line indicates the 2nd principal axis.

Figure O4 presents the relationship between the overall value-supply fit and nurses’ perception of their overall job performance. In this surface, the stationary point was located at $X_0 = -0.02$ and $Y_0 = -0.78$, which were statistically not different from 0. The first principal axis run at $Y = -0.78 - 0.22X$. The intercept of the first principal axis ($P_{10}$) was not significantly different from 0, but the coefficient on X ($P_{11}$) was significantly different from 1, which rejected the hypothesised dome-shaped optimal model. As shown in Figure O4, the surface was bowl-shaped and the first principal axis run closer to the $Y = -X$ line. This was also indicated by the confidence interval of $P_{11}$ that included –1. In contrast to the first principal axis, Table O1 shows that the second axis runs along the hypothesised line of the $Y = -X$ line ($P_{20} = -0.70$ was not significantly different from 0, and $P_{21} = 4.53$ was not significantly different from –1 at alpha level of .05). This supported the hypothesis. In addition, there was also no lateral shift of the first principal axis from the $Y = X$ line ($-P_{10}/(1 + P_{11}) = -1.01$, $p > .05$).

The slope of the surface along the $Y = X$ line ($a_x = 0.07$) did not significantly differ from 0. However, the curvature of the surface indicated an upward curve ($a_x^2 = 0.25$, $p < .05$). The surface along the $Y = -X$ line was also flat ($a_x = -0.17$, $p > .05$). But, its surface was linear ($a_x^2 = 0.41$, $p > .05$). These findings, again, rejected the
hypothesised dome-shaped model. The predicted model illustrates that the value-supply fit contributes to a different evaluation of nurses’ job performance to that predicted by the hypothesised model. When nurses had high work values and perceived environmental supplies to be high, they tended to see their job performance positively. When they had medial work values and perceived environmental supplies to be moderate, they tended to see their job performance negatively. In addition, the results showed nurses’ tendency to evaluate their job performance positively, when they had low work values and perceived environmental supplies to be low. This is because approximately 2.5% (0.6% after eliminating outlying cases) of participants rated their work values and the environmental supplies below the midpoint of the scale, but rated their job performance positively.

On the other hand, response surface analysis showed that nurses’ perception of their job performance was constant when they perceived the perfect misfit between work values and environmental supplies. This was indicated by the flat surface along the $Y = -X$ line. However, the analysis indicated that nurses’ evaluation of their job performance became high, when they perceived environmental supplies to be far more or less compared with their work values. This result was illustrated by the location of the first principal axis, which was slightly rotated off the $Y = -X$ line and its upward curve. Furthermore, the analysis showed that nurses’ perception of their job performance tended to be low along the second principal axis that was slightly rotated off the $Y = X$ line. That is, nurses tended to evaluate their job performance low when they had high work values and their work values slightly exceeded the amount of the environmental supplies they received. The results also showed nurses’ tendency to negatively value their job performance, when they had low work values and their perception of environmental supplies slightly exceeded their needs. The fact that only a small number of nurses rated their work values below the scale midpoint that this is less likely to happen in reality.
Appendix P: Description of the focus group participants

Table P1
Descriptions of the focus group participants

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Molly</th>
<th>Emma</th>
<th>Lena</th>
<th>Kitty</th>
<th>Helen</th>
<th>Erin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudonym</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan private hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
</tr>
<tr>
<td>Workplace</td>
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<td>Metropolitan private hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
<td>Metropolitan public hospital</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
</tr>
<tr>
<td>Work status*</td>
<td>Full-time</td>
<td>Full-time</td>
<td>Part-time</td>
<td>Full-time</td>
<td>Full-time</td>
<td>Part-time</td>
</tr>
<tr>
<td>Years of experience</td>
<td>12 years</td>
<td>3 years</td>
<td>10 months</td>
<td>17 years</td>
<td>23 years</td>
<td>33 years</td>
</tr>
<tr>
<td>Educational qualifications</td>
<td>Diploma</td>
<td>Degree</td>
<td>Degree</td>
<td>Hospital trained nursing certificate</td>
<td>Postgraduate diploma</td>
<td>Diploma</td>
</tr>
<tr>
<td>Current area of practice</td>
<td>Surgical ward</td>
<td>Post-Anaesthetic Care Unit</td>
<td>Medical ward</td>
<td>Gerontology ward</td>
<td>Medical ward</td>
<td>Palliative care</td>
</tr>
<tr>
<td>Work position</td>
<td>ANUM</td>
<td>Clinical staff</td>
<td>Clinical staff (graduate nurse)</td>
<td>Clinical staff</td>
<td>NUM</td>
<td>ANUM</td>
</tr>
<tr>
<td>Working condition</td>
<td>Permanent staff</td>
<td>Permanent staff</td>
<td>Permanent staff</td>
<td>Permanent staff</td>
<td>Permanent staff</td>
<td>Permanent staff</td>
</tr>
</tbody>
</table>

*Full-time is defined as ≥ 35 hours of work engaged per week, while part-time is defined as < 35 hours of work engaged per week. 2. As Lena is a graduate nurse, she seemed to know Molly through her graduate rotation. Kitty and Helen knew each other. These relationships were found on the day the focus group was conducted. However, as they were working on different wards, it is less likely that there was a power relationship between them, which could inhibit freedom of their expression.

Additional note. The participants were given the opportunity to review the transcription and to modify their responses before the analysis. Only Emma modified her responses. But, it was mainly directed at editing her responses. No change in her opinions was observed through her modification.
Appendix Q: The results of the focus group analysis

Figure Q1. Mapping the relationships between the themes identified in the focus group.
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Takase, Miyuki

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