AN INTEGRATIVE COGNITIVE-BEHAVIOURAL MODEL
OF MENOPAUSAL HOT FLUSHES AND NIGHT SWEATS

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Abstract

The menopause, which marks the end of a woman’s reproductive period, is universal, but the experience of its hallmark symptom, hot flushes and night sweats, also referred to as vasomotor symptoms (VMS), varies significantly across cultures and between women of the same culture. Despite evidence that thoughts and emotions play an important role in the perception of VMS, little research has focused on the filtering role of menopausal schema and how women’s cognitive style may contribute to those schemas. The main objective of this thesis, which focused on women from a Western culture, was therefore to better understand women’s cognitions about the menopause and VMS, in the context of a negative historical narrative of the menopause, ageism and widespread stereotypes about menopausal women. Another main objective was to develop an integrative cognitive-behavioural model, that would help us better understand the VMS experience. This thesis postulated that certain cognitions would confer women a vulnerability to experience VMS more negatively. Leventhal’s Self-Regulated Model of illness (SRM), was partly used as a theoretical framework to test how women’s cognitive style may influence their menopause representations, and, in turn, how these representations may affect the coping strategies women use and VMS appraisals.

The study involved a cross-sectional prospective survey of an Australian community sample of 517 pre-, peri- and postmenopausal women, aged between 40 and 60 years old. A subset sample of women who had entered the menopause and were experiencing VMS at the time of data collection (n = 171) was used for the model testing. The survey included seven measures of cognitive factors, identified as potential vulnerabilities (anxiety sensitivity, catastrophic thinking, depressive symptoms, negative affect, control beliefs, body consciousness, and perceived stress), measures of menopausal symptoms and beliefs, three measures of behavioural coping (positive strategies, cooling and avoidance) was also included, as well as three subjective measures of VMS appraisal (perceived frequency, bothersomeness and daily interference).
The main results of the study revealed that women’s cognitive and emotional representations of the menopause (MR) were generally neutral to positive. Overall, the menopause representations were significantly more positive for postmenopausal women than for pre- or perimenopausal women. Avoidance coping was used more often by women who scored more negatively on cognitive factors and had a more negative MR, and was associated with more negative VMS appraisals. Similar patterns were found for cooling, and opposite patterns for positive strategies. Results also showed partial support for the mediational model as outlined in the SRM. Findings from two competing models (MR-Coping-VMS appraisals and MR-VMS appraisals-Coping), however, revealed that, overwhelmingly, the direct effects were stronger between MR and VMS appraisals than between MR and coping strategies, while the opposite was true for the indirect effects.

The tested integrative cognitive-behavioural model of vasomotor symptoms, which had excellent fit indices, showed that control beliefs, catastrophic thinking, depressive symptoms and perceived stress influenced MR (explaining 45% of the variance), which in turn predicted all three measures of VMS appraisals. Catastrophic thinking and control beliefs also had strong direct effects on bothersomeness, while perceived stress directly influenced daily interference. Bothersomeness strongly predicted daily interference, and direct effects were also found from frequency onto bothersomeness, but not daily interference. Together these factors contributed to 14% of the variance in frequency, 59% in bothersomeness, and 65% in interference. Avoidance coping was predicted by catastrophic thinking and daily interference (44% of variance explained), positive behaviour by both MR and body consciousness (22% of variance explained), and cooling only by bothersomeness (11% of variance explained).

The results of this study highlight women’s resilience in displaying neutral to positive MR, and suggest that MR may improve as women transit through the menopausal stages. The findings also extend previous studies by highlighting the impact of distinct cognitive factors in influencing MR and its mediation role, the relationships between VMS appraisals, and the relationships between cognitive factors, coping strategies and VMS appraisals. These results improve our understanding of psychological factors that influence the menopause experience, and will assist researchers in developing cognitive-behavioural therapy that will enable women to manage VMS more effectively.
Declaration

(i) This is to certify that the thesis comprises only my original work,

(ii) Due acknowledgment has been made in the text to all other material used,

(iii) The thesis is less than 75,500 words in length, exclusive of tables, maps, bibliographies, appendices and footnotes.

Valerie M. Brown
Acknowledgements

During the progress of this research, I have seen my two children grow up, leave school and one of them home, I have divorced, bought a new house, suffered a haemorrhagic stroke, and went through the menopause, ironically without having a single hot flush. Such is the journey of life, unpredictable and challenging, but also rich and deeply fulfilling.

Whilst only my name appears as author of this thesis, many people have contributed to it, and I humbly would like to thank some of them.

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CHAPTER 1

INTRODUCTION

“[The] mind-body approach incorporates ideas, belief systems, and hopes, as well as biochemistry, physiology, and anatomy. Changing thoughts imply a changing brain and thus a changing biology and body. Belief systems provide a baseline for the functioning brain upon which other variables act and have their effects”

(Ray, 2004, Abstract)

The menopause, also referred to as the climacteric, is the permanent cessation of menstruation resulting from a progressive loss of ovarian follicular activity, and is identified retrospectively by 12 consecutive months of amenorrhea (Harlow et al., 2012). There is much debate about which symptoms are intrinsic to the menopause. Vasomotor symptoms (i.e., hot flushes and night sweats) are often regarded as hallmark menopausal symptoms, but common complaints from Western menopausal women include locomotor (e.g., musculoskeletal pain, restless legs syndrome), urogenital (e.g., vaginal dryness, decreased libido, dyspareunia), sleeping difficulties (related to or independent from night sweats), and psychological (depression, anxiety) symptoms (Bruce & Rymer, 2009; Freedman & Roehrs, 2007; Guidozzi, 2013). Whilst urogenital and vasomotor symptoms are thought to be directly attributed to hormonal changes, the causal link between the endocrine system and locomotor and psychological symptoms is still debated by researchers (Bryant, Judd, & Hickey, 2012; Judd, Hickey, & Bryant, 2012; Sievert & Goode-Null, 2005). Understanding menopausal symptoms is complicated by the aging process and the psychosocial pressures that occur during women’s middle life, such as children leaving the home, caring for parents, career change or retirement.

It is estimated that 10% of the world’s female population has either already gone through the menopause, or is currently going through it (Skouby, 2004), and that by 2025, the number of postmenopausal women will rise to 1.1 billion (Manson, 2014). With improvement in life expectancy, women are likely to spend a third of their life in the postmenopausal stage,
making the menopause a very significant event that has received an increased focus in the scientific literature. Research about the menopause so far has been largely undertaken within a biomedical perspective, with focus on symptom management (Rubinstein, 2013). For the past 50 years, hormone replacement therapy (HRT) has been the treatment of choice for the management of vasomotor symptoms. In 2002, however, the Women Health Initiative (WHI), a 15-year project in the United States, involving 161,808 women and focusing on a range of health conditions in postmenopausal women, released results indicating increased long-term risks of breast and gynaecological cancers, strokes, and cardiovascular disease for women using HRT (Rossouw et al., 2002). This marked a turning point in the “golden years” of HRT, as a significant decrease in prescriptions was recorded worldwide (Canfell, Banks, Moa, & Beral, 2008; De, Neutel, Olivotto, & Morrison, 2010; Hoffmann, Hammar, Kjellgren, Lindh-Åstrand, & Brynhildsen, 2005). Researchers have since focused on conducting more studies on the adverse effects of HRT, but confusion has prevailed, leading global menopause organisations to issue position statements about the benefits (and risks) of the treatment (Bowring & Francis, 2011; de Villiers et al., 2016; Gompel, Barlow, Rozenberg, & Skouby, 2007; Schmidt, 2012).

On the other hand, psychological intervention for menopausal vasomotor symptoms (VMS), has received relatively little attention (Rubinstein, 2013), despite growing interest in non-hormonal treatments since the release of the WHI results (North American Menopause Society, 2015; Panay & Fenton, 2016). Yet, psychotherapy, such as cognitive behavioural therapy (CBT), has been shown to be efficacious in reducing the impact of VMS (Ayers, Smith, Hellier, Mann, & Hunter, 2012; Balabanovic, Ayers, & Hunter, 2012; Mann, Smith, Hellier, & Hunter, 2011; Mann et al., 2012; Norton, Chilcot, & Hunter, 2014), and has been endorsed by the North American Menopause Society (2015)¹ as a non-hormonal treatment option.

At face value, it may appear surprising to consider psychological treatment for hot flushes, which are, after all, a biological phenomenon presumed to be in response to hormonal variations during the menopause. There are, however, three main rationales for using psychotherapy. First, VMS do not occur in isolation, but rather interact with a range of

¹ Notes: The European Menopause and Andropause Society (EMAS) has issued a position statement for non-hormonal treatment of VMS that noted limited evidence for cognitive-behavioural, behavioural and mindfulness therapies (Mintziori et al., 2015), but several seminal papers reporting randomised controlled trials (RCT), showing the efficacy of CBT were not included in the statement (Hunter, 2015a). The International Menopause Society issued a statement noting that “[...] cognitive behaviour therapy show promise in managing hot flushes, but adequately powered randomized trials are still needed” (de Villiers, Pines, et al., 2013, p. 328). The Australasian Menopause Society has not released any specific statement at the time of writing this thesis.
other factors that take place during middle-age and the menopause. These include biological (e.g., other menopausal symptoms mentioned above), physical (e.g., process of ageing), behavioural (e.g., sleep disturbances), cultural (e.g., cultural symbolism of the menopause), social (e.g., media and social influences, redefinition of social roles) and psychological (e.g., personal meanings of the menopause, psychological and emotional responses to flushing) factors. As such, vasomotor symptoms should be viewed within a biopsychosocial framework, rather than a strict biomedical framework (Ayers, Forshaw, & Hunter, 2011; Sievert, 2006). Second, whilst VMS are commonly experienced by menopausal women, there is wide variance in how they are experienced, whether in prevalence across cultural and ethnic groups, age of onset of flushing, frequency, duration of flushing episode, timeline in experiencing flushes and, importantly, the level of distress associated with them. It is more than likely that the interactions of the factors presented above play an important role in specific VMS trajectories. Indeed, a recent survey based on data from the Study of Women’s Health Across the Nation (SWAN), a multisite longitudinal study of various racial/ethnic groups, found that while hormonal fluctuations were correlated with vasomotor symptoms, the pattern was not consistent, concluding that other factors, such as race/ethnicity, premenopausal body mass index, lifestyle and psychosocial characteristics, namely anxiety, depressive and somatic amplification features, contribute to the VMS experience (Tepper et al., 2016). Third, and importantly, many women are distressed when experiencing flushing, and moderate to severe bothersome symptoms have been found to correlate with lower psychological well-being and quality of life (Blümel et al., 2011; Brown, Bryant, & Judd, 2015; Cappelleri & Komm, 2016; Gartoulla, Bell, Worsley, & Davis, 2015).

Given the variations in flush experience, the genesis of this research study came from two initial questions: why are some menopausal women more affected by hot flushes than others? and, do some women possess certain psychological or emotional traits that make them more vulnerable to a negative experience of flushing? There is cumulative evidence that an array of psychological factors can significantly impact on physical health (Astin & Forys, 2003; Gilbert, 2003; Ray, 2004), and psychologists can contribute in answering those two questions by increasing our knowledge of the psychological processes that take place during flushes, and the factors that influence these processes. Ultimately, this will help formulating specific psychotherapy, psycho-education and self-help strategies to improve women’s experience of the menopause and vasomotor symptoms. CBT, as mentioned earlier, is a promising management alternative for those women unable or unwilling to take HRT, and
Hunter and Smith (2013, 2014) have developed several VMS-specific CBT modalities, including self-help and group options. Nonetheless, as mentioned earlier, our understanding of the interplay between psychological and biological factors remains limited. The broad aim of the thesis, which focused on women from a Western culture, was, therefore, to gain a better knowledge of women’s cognitions about the menopause and the flushing experience, and, ultimately, to develop an integrative cognitive-behavioural model that would advance our understanding of this experience.

While two VMS cognitive models have been proposed and tested (Chou & Schneider, 2012; Hunter & Chilcot, 2013), empirical data on menopause-related cognitions is still limited, and there are no VMS- or menopause-specific theoretical frameworks. As a result, and though it is widely acknowledged that the menopause is not an illness, but a natural reproductive stage, social-cognitive models of health offer the best options to ground this research (a review of several models is provided in the literature review). Leventhal’s Self-Regulation Model of illness (SRM) was selected, mainly because it provides a sound theoretical structure to understand women’s cognitions about the menopause, due to its emphasis on illness representations, akin to cognitive schemas. Briefly, the SRM is a health model that posits that individuals make parallel cognitive and emotional representations of their illness, which inform the coping strategies they employ, which, in turn, determine illness outcomes.

The scope of this thesis, was, however, not simply to test the SRM as applied to the menopause and VMS, but to extend the SRM by incorporating cognitive and emotional factors that may impact upon the formation of menopause representations. This is a novel approach as, again, with the exception of the work by Hunter and Chilcot (2013), little is known about factors that influence menopausal representations, or illness representations for that matter. This top-down process, starting with identifying cognitive and emotional factors that may influence menopausal representations, forms the core of this research, which essentially tested which and how cognitive and emotional factors influenced the menopause representations, and how, in turn, these influenced vasomotor symptoms appraisals and coping strategies. It was assumed that these factors could confer a vulnerability to experiencing vasomotor symptoms more negatively. Thus, this research had three aims: 1) to better understand menopausal representations, 2) to explore how cognitive/emotional factors interact with menopausal representations and the appraisal of vasomotor symptoms, and 3) to
explore the relationships between coping strategies, cognitive/emotional factors, menopause representations and VMS appraisal, and propose an integrative cognitive-behavioural model of vasomotor symptoms.

This thesis is structured in four parts. Chapter 2, 3 and 4 present the literature review on the topic. Chapter 5 and 6 introduce the aims, hypotheses and the methodology. Chapter 7 and 8 outline the data preparation and specifications of analyses, as well as the results, and finally, Chapter 9 presents the discussion, including the research conclusion. The specific content of the chapters is presented below.

Chapter 2 presents a review of the physiological aspects of the menopause and vasomotor symptoms, and shows the heterogeneity of the VMS experience, not only across cultures, but also between women within the same culture. This chapter also reviews the various measurements for hot flushes, and highlights the low concordance between objectively and subjectively measured hot flushes, suggesting that psychological factors are likely to play a role in how women experience vasomotor symptoms. Beliefs women hold about the menopause also seem to be salient predictors of the subjective experience of VMS. Pharmacological and non-pharmacological treatments for VMS are reviewed as part of this chapter, as are the wide range of coping strategies women use in response to flushing.

Chapter 3 focuses on representations of the menopause. It starts with a brief examination of Leventhal’s Self-Regulation Model and defines the concept of representations. Various sources of information that contribute to women’s knowledge about the menopause, and thus the formation of menopausal representations, are then reviewed. It shows that women are generally confused about the menopause and VMS treatment options. Importantly, this chapter concerns the macro-narrative in which the menopause is taking place. For this purpose, a detailed historical account of the menopause is presented. It illustrates that, throughout the past century and a half, the menopause has successively been viewed as a contributor to mental illness, a disease that needs treatment and a factor perceived to increase the process of ageing. The impact of ageism is also briefly reviewed. This chapter then considers the negative influences of the media and significant others on maintaining those views. This thesis argues that those negative discourses have contributed to the stereotyping of the menopausal woman, although there is limited and mixed scientific support for those negative views. The feminist paradigm, however, has provided a more
compassionate and encompassing alternative view of the menopause, as a natural stage of life that should be embraced, rather than dreaded. The chapter finishes with an analysis of literature on menopause representations, which shows that most women represent their menopause as a neutral or positive event.

Chapter 4 comprises a literature review of the theoretical underpinnings of this research and empirical data on cognitive and emotional factors associated with the experience of vasomotor symptoms. It is loosely divided in two parts. The first part briefly reviews several social cognitive health models, although focuses on Leventhal’s Self-Regulation Model and the role of coping as a mediator of illness outcomes. This section also outlines how the SRM is applicable to the menopause, and reviews empirical data published by Chou and Schneider’s testing of the SRM for the menopause (2012). It then outlines Hunter and colleagues’ proposed cognitive model of the VMS, which was partly tested by Hunter and Chilcot (2013). The second part of this chapter focuses on identifying the potential cognitive and emotional factors that may influence menopause representations. A review of the literature led to the careful selection of six factors: anxiety sensitivity, catastrophic thinking, depressive symptoms, negative affect, control beliefs and body consciousness. The impact of stress was also considered, as it has been found to negatively affect the experience of VMS.

Chapter 5 presents the aims and hypothesis for the research. These are based on the gaps identified in the literature review presented in Chapter 2, 3 and 4. First, there is very limited published data on menopause representations based on the SRM. In particular, we do not know whether those representations are similar or different across menopausal stages. Second, we have limited knowledge about how the cognitive and emotional factors highlighted above impact upon the menopause representations and VMS appraisals. Most research focus on frequency of flushes and/or flush bothersomeness, less include measures of interference to everyday functioning, and very few include all three measures. Those three measures were thus included in this study, to determine the differential impact cognitive/emotional factors and menopausal representations may bear upon them, as well as the relationships between the three types of appraisal. Fourth, support for the role of coping as a mediator of illness representations and illness outcomes has been mixed (Hagger & Orbell, 2003), and it has seldom been examined in the context of the menopause. In particular, the role of avoidance coping has received little attention, despite its association with anxiety and depressive symptoms, as well as more negative illness outcomes.
Chapter 6 presents the method for this study. Chapter 7 describes the process for the preparation of data, which was necessary to conduct the statistical analyses. These included correlations, ANOVA and multiple regressions, mediation and path analyses. This section also presents the effect sizes and model fit indices selected. Sample sizes and power analyses are also provided, and show that the different samples for the analyses were large enough to provide sufficient power to detect small to medium effects.

Chapter 8 presents the analyses for the study. The sample statistics are first outlined, followed by the inferential statistics that address the aims and hypotheses in the order outlined in Chapter 5. In addition to answering specific hypotheses, three models are tested in this chapter, using path analyses. The first model presents the relationships between VMS appraisal variables (i.e., perceived frequency, bothersomeness and interference to daily life) and the menopause representations; the second model presents the relationships between cognitive and emotional factors, menopause representations and VMS appraisal variables, while the third final integrative cognitive-behavioural model incorporates the previous findings, as well as three types of behavioural coping.

Chapter 9 discusses the study findings, as well as its limitations and strengths. Theoretical and clinical implications, with various suggestions relevant in CBT, are presented here. Finally, this chapter outlines several avenues for extending this research. The thesis conclusion ends this chapter.
CHAPTER 2
THE MENOPAUSE AND VASOMOTOR SYMPTOMS

Chapter overview

This chapter presents an overview of the menopause and vasomotor symptoms, and highlights the wide variations in the experience of hot flushes and night sweats. The reasons behind those variations are complex and perhaps better understood when biological, social, cultural and psychological parameters are all taken into consideration. This chapter attempts to clarify these complex relationships, with a special focus on psychological factors.

The menopause: Definition, stages and symptoms

For the majority of women in Western countries (86% in Australia), the menopause occurs as a natural gradual process at a median age of 51 (Dennerstein, Alexander, & Kotz, 2003; Do et al., 1998; Sievert, 2006), although a minority of women experience premature menopause, defined as starting before the age of 40, or early menopause, starting between age 40 and 45 (North American Menopause Society, 2007). Premature and early menopause can be spontaneous when caused by primary ovarian insufficiency (POI), or induced, following cancer chemoradiotherapy or surgical intervention, such as bilateral oophorectomy, i.e. removal of both ovaries (Meirow & Nugent, 2001; Shuster, Rhodes, Gostout, Grossardt, & Rocca, 2010). While ovarian activity may spontaneously resume in women with POI and cancer treatment, early and premature menopause is often accompanied by severe menopausal symptoms, and in the case of oophorectomy, abrupt onset of symptoms (Chakravarti, Collins, Newton, Oram, & Studd, 1977; Sadeghi, 2013).

The natural menopause takes place over several stages, originally defined in 2001 by the Stages of Reproductive Aging Workshop (STRAW), which standardized a nomenclature for reproductive ageing (Soules et al., 2001). This universally accepted system, updated in 2011 (STRAW +10, Harlow et al., 2012), uses variation in menstrual cycles as its main criterion, supported by biomarkers, such as follicle-stimulating hormone (FSH), antral follicle count (AFC), antimüllerian hormone (AMH), and inhibin-B to demarcate stages in female
reproduction. The STRAW + 10 classification includes three phases (reproductive or premenopausal, perimenopausal and postmenopausal) and ten stages of reproduction, seven of them pertinent to menopausal women. The first menopausal indicators appear during the late reproductive stage (Stage -3a), when subtle changes in menstruation both in flow and length take place. The next phase, the perimenopause (also called ‘menopause transition’), is divided into two stages, early and late, with the former (Stage -2) being marked by increased variability in menstrual cycle length (i.e., persistent difference of seven days or more in the length of consecutive cycles). The late stage of the perimenopause (Stage -1) is defined by the occurrence of amenorrhea of 60 days or longer. This stage, which may last one to three years, is characterised by extreme fluctuations in hormonal level, and vasomotor symptoms (VMS, namely hot flushes and night sweats) are likely to start occurring at that time (Harlow et al., 2012). The early postmenopausal phase is divided into three stages, with the first (Stage +1a) marking the end of the 12-month period of amenorrhea required for the menopause to be ascertained. Stage +1b, which also lasts 12 months, includes the remainder of the period of rapid hormonal changes. VMS are most likely to be experienced during the two year-period comprising Stages +1a and +1b (Harlow et al., 2012). Hormonal levels finally stabilise in Stage +1c, estimated to last three to six years. During the late postmenopausal phase (Stage +2), which carries on for the remaining lifetime, changes in the reproductive endocrine function are more limited, although symptoms of vaginal dryness and urogenital atrophy become increasingly prevalent (Harlow et al., 2012).

Vasomotor symptoms are the most frequently experienced symptoms during the peri- and postmenopausal periods (Bachmann, 2005; Dennerstein, 1996), and are considered by most women as priority symptoms for treatment (Carpenter et al., 2015). VMS have been associated with emotional lability, mood change, impaired short-term memory and risk of cardiovascular disease (Pinkerton, 2015), and the negative impact of VMS on well-being, quality of life and mood has been well documented (Avis et al., 2009; Blümel et al., 2012; Collins & Landgren, 1994; Groeneveld et al., 1996; Sturdee, 2008; Worsley, Bell, Kulkarni, & Davis, 2014). Frequency and severity of VMS have also been found to predict interference with daily functioning (Brown, Bryant, Brown, Bei, & Judd, 2014; Woods & Mitchell, 2011). Indeed, menopausal women often complain of sleep difficulties and fatigue, although evidence for the impact of VMS on sleep disturbance is mixed (Freedman & Roehrs, 2004; Krystal, Edinger, Wohlgemuth, & Marsh, 1998; Moe, 2004). Several recent studies have also investigated the impact of the menopause in the workplace (Fenton & Panay, 2014; Griffiths, MacLennan, & Hassard, 2013; Working Mother Research
Institute, 2014) and found that hot flushes can be a major source of disruption and distress at work, especially in hot and poorly ventilated environments, and during formal meetings or presentations. Many women feel unwilling to report their discomfort due to embarrassment; some admit their work performance can be negatively affected, while a minority feel the need to make adjustments to work schedules. Menopausal symptoms may also lead to absenteeism for one in ten women (Working Mother Research Institute, 2014). In order to establish work productivity loss and healthcare resource utilisation, Sarrel and colleagues (2015) analysed Health Insurance claims$^2$ of 252,273 women with untreated VMS spanning over a decade (1999-2011). They found that women experiencing untreated VMS had 57% more indirect work productivity loss days than those who were treated, leading to an indirect work productivity loss costs of over US$27 million per year. Together these studies highlight the cost of vasomotor symptoms at a personal and societal level, with ramifications for women both in the private and public spheres of their lives.

**Physiology and measurement of vasomotor symptoms**

Hot flushes (HF) manifest as sudden and transient sensations of heat that initiate skin reddening (usually around the face, neck and torso) and sequential sweating (Deecher, 2009). Night sweats (NS) are the nocturnal equivalent of hot flushes, although they may be more inconspicuous. A major etiological hypothesis has focused on the role of oestrogen, which directly and indirectly modulates the serotonin and norepinephrine levels in the hypothalamus, the brain area responsible for body temperature regulation (Cooper, 2001). During the menopausal transition, fluctuations of oestradiol (rather than the levels per se), decreased levels of inhibin b, and increased FSH levels are associated with elevated vasomotor symptoms (Freeman et al., 2007). The variations of oestrogen are believed to lead to the disruption in temperature homeostasis associated with HF/NS (Deecher, 2009). The mechanisms are not fully understood, but it is suggested that this disruption leads menopausal women to have a reduced upper core body temperature threshold that results in a narrowing of the body thermoneutral zone (TNZ) (Freedman & Krell, 1999). Consequently, external triggers such as exercising, drinking hot liquids, eating hot foods or change in ambient temperatures, and internal triggers, such as emotions (i.e., anger or embarrassment) that would normally have little impact on the body temperature, may precipitate the vasomotor event. Stress,

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$^2$ Participants were covered by 60 self-insured Fortune 500 companies in the United States.
either acute or chronic, is also believed to impact on frequency and intensity of HF/NS probably by reducing the threshold for triggering them at the hypothalamic level (Swartzman, Edelberg, & Kemmann, 1990) and/or by increasing central sympathetic activity (Tuomikoski, Ylikorkala, & Mikkola, 2011). Subjectively measured stress, however, has failed to predict physiologically measured or self-reported flushes (Hunter & Chilcot, 2013).

The experience of vasomotor symptoms is multifaceted, and several dimensions are routinely measured in menopausal research. Woods (2010) identified seven different symptom dimensions in an attempt to provide a theoretical framework for research. They include:
1. Presence or absence of symptoms
2. Frequency, i.e., how many times are symptoms experienced during a specific timeframe
3. Severity, i.e., from barely noticeable to extremely severe
4. Duration, measured in minutes, hours or days
5. Bothersomeness, i.e., the extent to which one is bothered by VMS
6. Burden, i.e., the total number of symptoms
7. Interference, i.e., how VMS interfere with daily activities

Hot flush frequency can be measured objectively through sternal skin conductance (SSC), an electrical measure of sweating that can be recorded through an ambulatory monitor, with levels increase of ≥ 2 μmho (electrical unit of conductance) within 30 seconds, providing good sensitivity and specificity in detecting hot flushes (Freedman, 1989; Hunter & Haqqani, 2011). Whilst monitors can capture hot flush frequency, they do not usually provide data on intensity, duration, or interference with activities (Miller & Li, 2004). Furthermore, there are research limitations due to devices being heavy, bulky and not waterproof (Webster, Bahr, Shults, Grady, & Macer, 2007), and hot flushes are often measured subjectively using diaries or self-report scales, either as an alternative to SSC or simultaneously. Whilst there are a number of menopausal scales that seek to detect all menopausal symptoms (e.g., the Kupperman Scale, Blatt, Wiesbader, & Kupperman, 1953; the Greene Climacteric Scale, Greene, 1991; the Menopause Rating Scale, Hauser, Huber, Keller, Lauritzen, & Schneider, 1994), hot flush specific scales and diaries can be used to determine frequency, severity, bothersomeness and interference with daily life. There are, however, several drawbacks to the subjective method: diary noting requires that women be conscientious, which is difficult during sleep, intensity rating scales often depend
upon memory recall, reporting may be influenced by affective factors such as anxiety, and this method offers little precision of timing of hot flushes (Freeman et al., 2005; Miller & Li, 2004).

Of concern to researchers is that the concordance between subjective and objective reporting is moderate at best. A systematic review of studies that compared those two methods conducted by Mann and Hunter (2011) found an overall concordance rate of 29%, although there was great variability between studies. Non-ambulatory studies (i.e., in laboratory or clinic) tended to produce a higher concordance rate between methods (54%) while ambulatory studies (i.e., in daily routine and sleep) yielded more homogeneity of concordance across studies (29% concordance, 44% under-reporting, and 27% over-reporting). Predictably, night sweats were generally under-reported (rates varying between 36% and 63%), but a lower rate for over-reporting (21%) was also noted by the reviewers. Unsurprisingly, a study by Hunter and Haqqani (2011) showed that accuracy of reporting was higher for moderate or severe HF/NS, while women tended to over-report mild to moderate vasomotor symptoms. Low concordance have led researchers to recommend the use of both objective and subjective methods (Mann & Hunter, 2011). Others have warned about the inability of objective measures to capture the distressing component of vasomotor symptoms (Carpenter, Azzouz, Monahan, Storniolo, & Ridner, 2005), and suggested the inclusion of subjective measures if the primary research concern is to help women find relief from hot flushes (Miller & Li, 2004).

**Cultural variations in the experience of the menopause and VMS**

The physiological process of the menopause is universal, but the experience associated with it varies widely across cultures and between women within the same culture. First, a brief analysis of semantic and connotations relating to the term “menopause” offers an interesting insight as to how it is experienced across cultures. The term “menopause” was coined in 1821 by the French physician Gardanne, from the Ancient Greek “mên” meaning “month” and “pausis” for “to cease or stop” (Mbarga, 2010). Whilst the term quickly gained currency within European and Northern American medical circles and was adopted by lay women (Tilt, 1870, as cited in Lock & Kaufert, 2001), there are vast differences across cultures on how the menopause is perceived. In Hebrew, the menopausal term *gil ha’blut* translates loosely as “the age of worn out” and Arabic the term *sinn al-ya’s* means “age of despair or sorrow” (Obermeyer, 2000). Conversely, the transition towards the menopause is seen as a gain of status amongst North
Australian Aboriginal and South African Bantu women (Congress Alukura Naganampa Health Council, 2008; Flint, 1975). Similarly, for Beti women in South Cameroun, the menopause signifies a welcomed liberation from sexual “duties” as women refuse any sexual relationships from then on, and become social equals to men (Vincent, 2003). In Japanese, the word “menopause” simply does not exist, although the term “kokenki” may be used with social rather than biological connotations to describe midlife transition (Collins, 2002; Lock, 1998). Likewise, the equivalent words for hot flushes are absent from specific ethnic groups’ vocabulary, such as the Mayans of Yucatan or the Indians of Rajput (Beyene, 1986; Obermeyer, 2000). For others, hot flushes have positive connotations: in Thailand, hot flushes may be seen as a way to attain spirituality and purity (Chirawatkul & Manderson, 1994), whilst in Greece and New Foundland, they have been conceptualised as a means for the body to expel harmful vapours or preventing the development of high blood pressure (Beyene, 1989; Davis, 1983).

Beyond differences in conceptualisation, there is international diversity in reported symptomatology at the time of menopause. For instance, while hot flushes are widely experienced by Caucasian menopausal women (Bruce & Rymer, 2009; Woods & Mitchell, 2005), they may not be the chief complaint in other parts of the world: Japanese women complain mainly of shoulder stiffness and Taiwanese women of backache and tiredness, while Lebanese women describe being mostly fatigued and irritable (as cited in Obermeyer, 2000). Two large multinational studies on Asian women identified that, across the continent, VMS were not the most commonly reported menopausal symptoms, but body and joint aches, memory problems, sleeplessness, irritability and migraines were (Haines, Xing, Park, Holinka, & Ausmanas, 2005; Huang, Xu, Nasri, & Jaisamrarn, 2010). With regards to VMS, large variations were found in Haines and colleagues’ study, ranging from 100 percent of prevalence for Vietnamese women and 5 percent for Indonesian women. A study published in the United States by Avis (2001) also highlighted the diversity of the menopause experience in a sample of 14,906 women of Caucasian, African-American, Chinese, Japanese, and Hispanic origins. The study, based on data collected during the Study of Women’s Health Across the Nation (SWAN), found different patterns of menopausal symptoms: first, African-American women reported high frequency of hot flushes, while East Asian women reported low frequency; second, Caucasian women were found to have more psychosomatic symptoms than any other racial/ethnic groups. Adding to this evidence, several reviews of menopausal symptoms across ethnic groups/cultures have highlighted similar patterns of low VMS frequencies reported by East Asian women (Collins, 2002; Freeman & Sherif, 2007; Melby, Lock, & Kaufert, 2005).
Obermeyer, 2000). The reviewers pointed to several sources that may explain the differences in menopausal experience and/or VMS frequency: social factors (marital/societal status and roles, education and demographic characteristics), attitudes and meanings (cultural attitudes towards childrearing, women’s role, the end of reproductive life and aging, including husband/partner’s attitudes towards the same and mother’s experience of the menopause), health (prior and current general and reproductive health, reproductive cycles), place of residence (rural versus urban, adaptation to seasonal variations in temperate climate) and lifestyle (smoking, diet, exercise, body mass) (Freeman & Sherif, 2007; Melby et al., 2005; Obermeyer, 2000).

In an analysis of possible biological and non-biological factors affecting the prevalence of vasomotor symptoms, Crawford (2007) asserted that “[…]; culture may influence menopause-related physiology and thus VMS occurrence, as well as VMS perception and reporting” (p. 725). Indeed, it is striking that the conceptualisation of the menopause seems linked to its manifestation, including for symptoms such as VMS, which are evidently linked to the endocrine system. Generally speaking, Asian and tribal women with positive representations of the menopause (freedom from reproduction, access to higher social status, association with age of wisdom) report fewer VMS compared with Middle-Eastern, North African and Western women, who tend to have negative views of the menopause, i.e., associations with body decay and hormonal deficiency (Lock, 1993).

Some caveats regarding cultural research need, however, to be noted. First, systematic reviews have all highlighted the limitations in comparing symptom prevalence due to differences in research methodology and indigenous definitions of the menopause (Freeman & Sherif, 2007; Melby et al., 2005; Obermeyer, 2000). Second, and this is not specific to menopausal research across cultures, differentiating between menopausal symptoms and those due to ageing can be difficult, and Melby and colleagues (2005) pointed out that many of the symptoms reported by women in the context of menopausal research, such as memory loss, fatigue, musculoskeletal pain, are also identified by middle-age men. Third, symptoms may be under-reported due to social taboos surrounding the menopause in some cultures (Brown, Sievert, Morrison, Reza, & Mills, 2009). Last, and importantly, the interactions between biology and socio-cultural factors are complex and poorly understood. Whilst acknowledging the impact of cultural beliefs on the menopausal experience, Locke and Kaufert (2001) raised the significance of local biologies, which reflect the very different social and physical conditions.
women experience across the world. Expanding on this concept, Melby (2005) emphasised that

“[…] the menopausal phenotype may well reflect the outcome of an individual’s lifetime interactions in the local environment. Each menopausal body is the product of decades of physiological and anatomical responses to the environment and is a record of nutritional, immune, reproductive, social, and cultural history” (p. 60).

**Variations in the experience of VMS within the Western culture**

Differences in menopausal experience are not just found cross-culturally. An extensive body of research has also demonstrated and sought to explain the differences in the way Caucasian women experience the menopause and, in particular, the disparity in vasomotor symptom reporting, especially in duration, frequency, bothersomeness and interference to daily life due to symptoms.

Before examining those differences, however, it must be noted that there are some consistencies in VMS experience. For instance, vasomotor motor symptoms are more prominent in the late perimenopause and early postmenopause periods, corresponding to high hormonal fluctuations during that time (Harlow et al., 2012; Nelson et al., 2005; Williams et al., 2008; Woods & Mitchell, 2005). This is supported by a 7-year longitudinal study of 438 Australian-born women that included 172 women transiting from premenopause to perimenopause or postmenopause (Dennerstein, Dudley, Hopper, Guthrie, & Burger, 2000). The study found that menopausal stage was a contributing factor to the prevalence of VMS, with significantly more symptoms reported during the late perimenopause period, and the largest increase occurring between early and late perimenopause. The prevalence of *ever* having VMS is also relatively consistent in research sampling Western culture women: 88% for North American women (40–65 years old; Williams et al., 2008), 89.6% for British women (54–65-years old; Hunter et al., 2012) and 80–83% for Australian women (45-55 years old; Guthrie, Dennerstein, Taffe, Lehert, & Burger, 2005; Nand, Webster, Babert, & Heller, 1998).

Despite consistency in VMS prevalence, differences in how frequently women experience flushes have been noted. Percentages of women experiencing VMS and HF/NS means are usually reported in the literature, often by menopausal status, but the number of
occasions in which those symptoms are experienced is seldom noted. Nonetheless, a thorough analysis by Williams et al. (2008) shows the vast disparity in the frequency at which women experience HF/NS. The study, based in the United States, sampled 4,402 peri- and postmenopausal women aged 40-65, 78% of whom were Caucasian, and highlighted that 23.7% of women had experienced hot flushes every day over the past four weeks (19.6% for night sweats), but 29.1% had them one to three days over the same period (32.6% for night sweats). On the days of flushing, 62.5% of women had one to two HF per day (82.2% for night sweats) and 6.1% had more than seven per day (1.6% for night sweats). Adding to this evidence are findings reported by Hunter and Liao (1995), who noted a large range in the frequency of VMS experienced per week from two to 109 (mean participants’ age = 35-71 years old, N = 61).

Differences have also been found in the duration of flushes, as well as how bothersome they are perceived to be. In a survey of 501 women aged 29 to 82 years old, Kronenberg (1990) asked participants to record the duration of current hot flush episodes over two days. Some women (16.4%) could not provide an estimation because their hot flushes varied greatly in duration, but for most (55.5%), hot flushes lasted one to five minutes; 17.4% reported them to last less than a minute and 5.7% more than six minutes. For a very small number of women (about 1%), flushes lasted more than 15 minutes. A larger duration range has been reported previously in the literature, from less than five seconds to over 60 minutes (Voda, 1981). Some studies have found an association between symptom frequency and bothersomeness (Hunter et al., 2012; Thurston et al., 2008), whilst others have not (Hunter & Liao, 1995), highlighting that VMS frequency does not always correlate neatly with bothersomeness. Like frequency, however, bothersomeness tends to vary greatly: some women seem to tolerate their flushes well, while others can be quite bothered by them (Duffy, Iversen, & Hannaford, 2012), especially when symptoms interfere with sleep (Thurston et al., 2008), or when experienced during work (Reynolds, 1999a).

The overall period during which women experience HF/NS is also quite variable. For some women, VMS last only a few months or a couple of years following the final menstrual period (FMP), but recent data suggest that, for others, flushes can persist long after the FMP. For instance, Blümel and colleagues (2012) conducted a cross-sectional survey of 8,373 women (40-59 years old) in 12 Latin American countries, and observed that 60.6% of women were still experiencing VMS for at least five years after the menopause, with 11.5% still having severe to very severe flushes during that time. Similarly, a meta-analysis of 10 studies including 35,445
participants conducted by Politi, Schleinitz and Col (2008) found that nearly 50% of women reported vasomotor symptoms four years after the FMP, and 10% of them were symptomatic as long as 12 years after final cessation of menses. This was supported by another large cross-sectional survey in the United Kingdom (N = 10,418) by Hunter et al. (2012), who found that, for some women, VMS persisted at a high average frequency (33 per week) across the postmenopausal period, up to the age of 65. A longitudinal study by Col and colleagues (2009) over a 13 year period (N = 438 participants) concluded that the mean duration for bothersome symptoms was 5.5 years for women who used hormone replacement therapy and 5.2 years for those who did not use hormonal treatment. This is similar to the latest published data by Avis and colleagues (2015) based on the SWAN research (N = 3,302), which highlighted that the median total VMS duration was 7.4 years. In an unfortunate twist, the authors also found that the earlier the menopause starts, the longer VMS are likely to last.

All these recent studies tend to challenge previous assumptions that hot flushes usually abate within months, or, at most, within a few years (Kronenberg, 1990). Caution, however, must be exercised in analysing prevalence research, as it is possible that women who do not experience any hot flushes or are not bothered by them do not feel the need to voluntarily engage with researchers, as opposed to symptomatic women. A recent systematic review of Australian studies on prevalence and severity of menopausal symptoms by Gartoulla and colleagues (2014) also warned about drawing conclusions on frequency and bothersomeness, as no consistent pattern in symptom reporting and wide variations for all symptoms, including for VMS, were found across studies. The authors cited a high level of bias related to external and internal validities, and suggested that inconsistencies between studies (design, sample selection and size, and lack of validated instruments) were likely to also occur in other countries.

Predictors and correlates of frequency and bothersomeness of VMS: A focus on cognitive and emotional factors

There are two ways in which the association between VMS and psychological and emotional factors can be observed. The first, which has been widely debated, focuses on the causal link between the menopause and mood disorders, especially during the perimenopause. The second, which has received far less attention, attempts to determine how psychological and emotional factors influence the experience of the menopause and vasomotor symptoms.
The latter stems from the vast body of evidence, highlighted above, that there are wide variations between women in how they experience hot flushes, and that these differences cannot be explained solely by physiological phenomena.

The fundamental question is: why do some women report more VMS or are more bothered than others when experiencing a hot flush? As outlined earlier, frequency of VMS is strongly related to menopausal status, but other predictors, such as depressed mood, anxiety, having a hysterectomy and discontinuation of HRT, have been identified, although they only explain very little variance in VMS frequency (Hunter et al., 2012). The Body Mass Index (BMI) is often cited as a predictor of frequency but, puzzlingly, both high and low BMI have both been linked to more frequent VMS (Gallicchio et al., 2005; Hunter et al., 2012; Whiteman et al., 2003). As noted above, bothersomeness has been found to correlate with frequency and hot flush duration in some studies (Hunter et al., 2012; Thurston et al., 2008), but there is also support for a number of other predictors being at play, such as mood and negative affect, symptom sensitivity, attitudes towards the menopause, sleep problems, poor health, smoking, discontinuation of hormone replacement therapy, having a hysterectomy or a bilateral oophorectomy, age, race and being divorced (Avis, Crawford, & McKinlay, 1997; Hensley, 2004; Hunter et al., 2012; Thurston et al., 2008).

The influence of emotional and psychological factors on VMS appraisal has been consistently identified, and may operate via the mediation of women’s beliefs about the menopause (Hunter & Chilcot, 2013; Hunter & Mann, 2010; Thurston, Blumenthal, Babyak, & Sherwood, 2005). Indeed, a synthesis of VMS research reveals a complex picture in which other factors, such as physiological and behavioural factors, attitudes towards menopause, dispositional traits and life changes are likely involved in the experience of vasomotor symptoms (Bryant, Judd, et al., 2012; Freeman & Sherif, 2007). Hunter and Haqqani (Hunter & Haqqani, 2011) also highlighted the role of negative or positive beliefs about hot flushes in mediating the relationship between several variables (mood, somatic amplification and obesity) and the perceived severity of flushes. The extent to which depressive mood and anxiety specifically contribute to frequency and severity of vasomotor symptoms is difficult to assess, although there is evidence for a propensity for women with negative affect to report more HF. For instance, in a 6-year longitudinal study, Freeman et al. (2005) found that anxiety levels at previous assessment predicted frequency and severity of HF, while changes in anxiety between assessments was also a significant predictor of HF frequency. The authors, however, used an
anxiety scale that contains several somatic items (Zung Anxiety Index), making it difficult to
distinguish between anxiety and menopausal symptoms. In one of the few studies using a well-
validated measure of anxiety (State-Trait Anxiety Inventory), Thurston, Blumenthal, Babyak
and Sherwood (2005) found that the subjective reporting of false-positive HF (i.e., HF that were
not verified via physiological measures) was more likely after increased frustration and
decreased feelings of control but, conversely, objectively measured HF were preceded by
positive emotions (happiness, relaxation, and feelings of control) and less likely to occur with
negative emotion (increased frustration, sadness, and stress). Hunter and Liao (1995) surveyed
61 women who experienced HF, and found that duration or frequency of HF did not correlate
with negative impact of HF but mood, anxiety and self-esteem did, suggesting that mood may
influence the interpretation of emotional reaction to flushes. This finding is in line with a
proposed emotion-to-symptom path, which shows that the induction of negative mood
increases both the frequency and severity of symptoms reporting (Leventhal et al., 1997). Finally,
recently published research by Mitchell and Woods (2015) using data from the Seattle Midlife
Women’s Health Study (N = 291) found that only menopausal stage and anxiety out of the
measures taken predicted severity of hot flushes, lending further support to the idea that
cognitions and emotions are a key factor in the experience of VMS.

As we enter the 21st century, the link between mind and body is no longer in doubt,
and epidemiological research has strongly supported the association between psychological
factors (personality, mood states, and cognitive factors) and physical health (Astin & Forys,
2003). For instance, there is a consistent body of research that supports a causal link between
psychological stress and a wide range of diseases (Cohen, Janicki-Deverts, & Miller, 2007), and
strong evidence that helplessness/hopelessness is linked to poorer health outcomes and even
decreased chances of survival for people with major illnesses (Ray, 2004). Beliefs about
illnesses have also been found to predict the experience of illness (Leventhal, Diefenbach, &
Leventhal, 1992). Research on the connection between cognitions and vasomotor symptoms is
still in its infancy, but a number of studies have recently sought to determine the relationships
between psychological and emotional factors and hot flushes (Hunter et al., 2012; Hunter & Liao,
1995; Hunter & Mann, 2010; Reynolds, 2000; Thurston et al., 2008). A review of this research will be the
focus of Chapters 3 and 4.
Coping with VMS: Strategies and treatments available

The impact of VMS can considerably reduce quality of life for some women (Utian, 2005), and there has been a considerable clinical effort focusing on alleviating these classic menopausal symptoms. Treatment can loosely be classified in three broad groups: traditional medicine, alternative (usually herbal) therapy, and psychological therapy. Behavioural strategies women used to cope with their symptoms, often based on common sense, are also reviewed.

Briefly, there are three main medical treatments for VMS: Hormone Replacement Therapy (HRT), and two non-hormonal therapies using antidepressant medication and Gabapentin. HRT is a standard and effective treatment for VMS and other menopausal symptoms, but recent studies, including a seminal research associated with the Women's Health Initiative³ (WHI), have recently demonstrated small, but increased long-term risks of breast and gynaecological cancers, strokes, and cardiovascular disease for women using HRT (Bath & Gray, 2005; Rossouw et al., 2002), leading many women in several countries, including Australia, either to discontinue or reduce treatment (Canfell et al., 2008; De et al., 2010; Hoffmann et al., 2005). Antidepressants, particularly Selective Serotonin Reuptake Inhibitors (SSRIs), have been considered for the treatment of VMS because of their mode of action and the anecdotal evidence that they were efficacious (Stearns et al., 2002). Several serotonergic antidepressants have been shown in initial randomised clinical trials to reduce flushes better than placebo: the SSRIs Fluoxetine by 50% (Loprinzi et al., 2002) and Paroxetine by 65% (Stearns, Beebe, Iyengar, & Dube, 2003), and the SNRI Venlafaxine by 61% (Loprinzi, Kugler, et al., 2000), although other studies have since reported lower efficacy (Carpenter et al., 2007; Evans et al., 2005; Suvanto-Luukkonen et al., 2005). Other antidepressants, such as Trazadone and Mirtazapine, which act at noradrenergic and 5-HT2a receptors, have also shown promising results (Stearns et al., 2002). Side-effects of antidepressants are moderate, but can include dry mouth, decreased or increased appetite, headache, drowsiness, nausea, constipation, sleeplessness and decrease in libido, often leading to drug discontinuation, especially at high doses (Nelson, Vesco, Haney, & et al., 2006; Stearns et al., 2002). Gabapentin is an anti-epileptic medication that has been shown to

³ The Women Health Initiative is 15-year project, involving 161,808 women aged 50-79, focusing on preventing heart disease, breast and colorectal cancer, and osteoporotic fractures in postmenopausal women, which has been conducted in the United States since 1993 (see www.whi.org).
have efficacy on VMS with 20 to 30% reduction in frequency and severity of flushes. However, reported side effects (dizziness/unsteadiness and fatigue/somnolence) can also lead to women withdrawing from the medication (Toulis, Tzellos, Kouvelas, & Goulis, 2009).

Despite recent statements from leading scientific organisations that the benefits of HRT, especially oestrogen therapy, outweigh its potential harms (Bowring & Francis, 2011; Gompel et al., 2007; Schmidt, 2012), women have been increasingly looking to natural therapies to alleviate vasomotor symptoms, including using black cohosh, vitamin B, kava, red clover, primrose oil, dong quai root, and ginseng root. Poor study methodology has, however, limited the conclusions that can be drawn regarding herbal therapy, and research so far has failed to demonstrate efficacy over and above the placebo effect (Bordeleau, Pritchard, Goodwin, & Loprinzi, 2007; Huntley & Ernst, 2003; National Institutes of Health, 2005b; Pockaj et al., 2006). Yet, despite the lack of demonstrated efficacy for herbal remedies, these treatments remain more commonly used than prescription drugs (Duffy et al., 2012). The idea that a diet rich in phytoestrogens derived from soya-based foods may be a factor explaining the low prevalence of vasomotor symptoms in East Asian women, has lead numerous researchers to investigate the benefits of soy isoflavone supplementation on VMS, although thus far results have been mixed (Clarkson et al., 2011; Gold et al., 2013; Lethaby et al., 2013). Other alternative therapies include acupuncture and chiropractic, but there is little evidence these treatments are effective (Goto et al., 2014; Lee, Kim, Choi, & Ernst, 2009). Indeed, a recent position statement of the North American Menopause Society (2015) on a range of non-hormonal treatments for the management of VMS found negative, insufficient or inconclusive evidence to recommend acupuncture, chiropractic, over-the-counter supplements and herbal therapies as treatment options. Since then, however, Avis and colleagues (2016) have published the results of a randomized control trial using acupuncture treatment, which showed a significant reduction in VMS frequency and interference to daily life, as well as several quality-of-life measures; beneficial effects were maintained over six months.

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4 A statement by the British Menopause Society issued in 2013 takes the more conservative approach that women should be given individualised advice on how to optimise treatment, although the society states that “Arbitrary limits should not be placed on the duration of usage of HRT; if symptoms persist, the benefits of hormone therapy usually outweigh the risks” (Panay, Hamoda, Arya, & Savvas, 2013, p. 6).
Psychologically oriented interventions for the treatment of VMS, such as education, counselling, mindfulness and Cognitive Behavioural Therapy (CBT) have also generated interest. A review of psychological interventions, including education, counselling, cognitive-behavioural strategies and mindfulness-based stress reduction highlighted some promising results, but the authors indicated that poor quality in the published research limited their findings (Tremblay, Sheeran, & Aranda, 2008). Nonetheless, since this review, a randomised trial of mindfulness-based stress reduction, conducted by Carmody and colleagues (2011), concluded that mindfulness resulted in clinically significant reductions in VMS-related bother and distress, with positive effects maintained three months post intervention. The study findings, however, did not reach statistical significance, leading the North American Menopause Society (2015) to only recommend the use of this type of treatment with caution.

On the other hand, CBT was indeed endorsed by the North American Menopause Society (2015), which found enough evidence (Level I) to recommended it as a good treatment option. CBT for VMS is still in a relatively early stage, and much of the effort to develop a cognitive model of VMS can be attributed to Hunter and colleagues (Hunter, 2003a; Hunter & Chilcot, 2013; Hunter & Liao, 1995; Hunter & Mann, 2010). In brief, CBT for hot flushes and night sweats can include several modalities, including psycho-education for VMS and the menopause, monitoring of flushes and identifying precipitants, behavioural experiments and strategies, paced breathing, cognitive therapy for stress and beliefs about flushes and the menopause, as well as focus on night sweats and sleep (Hunter, 2015b). Several studies, including randomised control trials (RCTs), have recently reported significant improvement in frequency and problem rating of flushes, as well as mood, sleep, quality of life, social and physical functioning, and improved general health, with some durable positive effects up to 26 weeks (Ayers et al., 2012; Balabanovic et al., 2012; Hunter, Coventry, Hamed, Fentiman, & Grunfeld, 2009; Mann et al., 2012). Further exploration of the RCTs through in-depth questionnaires indicated that changes in cognitions (beliefs about coping/control of HF, beliefs about NS and sleep) mediated the positive effects of CBT on VMS bothersomeness (Norton et al., 2014). A benefit of CBT is that it can be delivered in group (Hunter & Smith, 2014) or self-help modality (Hunter & Smith, 2013), with limited number of sessions, possibly making it a cost-effective treatment for vasomotor symptoms.
Lastly, but importantly, women are quite resourceful in the way they cope with flushes. Coping refers to cognitions and behaviours that individuals use to reduce stress and moderate its emotional impact (Lazarus & Folkman, 1984). Essentially, when confronted with flushes, women respond with a range of behavioural and cognitive strategies to help reduce both physical and emotional stress associated with vasomotor symptoms. Typically, to regain normal body temperature, women try to cool down by moving to a cooler place, using fans, cold objects or wet towels, splashing water, removing clothing or seeking fresh air (Williams et al., 2008). They may ignore the symptoms altogether, carry on, self-talk, distract themselves with other activities, use relaxed breathing or muscle relaxation, communicate openly with others about their experience, or even use humour. Some use safety behaviours, such as avoiding social situations, restricting activities (e.g. limiting exercise), or covering their face in an attempt to reduce embarrassment (Hunter, Ayers, & Smith, 2011; Hunter, Coventry, Mendes, & Grunfeld, 2009; Hunter & Mann, 2010). Not surprisingly, lack of coping has a significant relationship with flush bothersomeness, although it is only moderately related to flush frequency (Rendall, Simonds, & Hunter, 2008).

Several studies have focused on the association between coping styles and the experience of the menopause symptoms. Seeking social support, for instance, has been linked to rating the menopause as more stressful (Bosworth, Bastian, Rimer, & Siegler, 2003), but of course, it may be that those with more distressing symptoms are more likely to discuss their stressful experience with others. Similarly, findings by Neri and colleagues (1997) that active coping was associated with more severe hot flushes may actually imply that the more severe symptoms are perceived, the more women will actively engage in addressing them. Hunter, Ayers and Smith (2011) developed a behaviour scale that surveys three dimensions of coping strategies: cooling behaviours, positive behavioural strategies and avoidance. The authors found that positive strategies (carrying on, ignoring HF/NS, using humour, or paced breathing and relaxation) were associated with positive beliefs and less problematic vasomotor symptoms. Conversely, avoidance or even preventative behaviours (using fans or wipes) were linked to more negative beliefs, and frequent and bothersome HF/NS. Hunter and Mann (2010) speculated that these coping mechanisms may actually increase and maintain distress and negative beliefs, in a similar way that safety behaviour prolongs anxiety by not allowing disconfirmation of the fear stimuli. Indeed, avoidance coping tends to correlate with anxiety (and depressive) symptoms, with medium to large effect sizes, as recently found in a
meta-analysis on emotion-regulation strategies across psychopathology conducted by Aldao and colleagues (2010).

Certainly, the relationship between coping and symptoms is complex; it involves appraisal and constant reappraisal, and it is likely bi-directional. For instance, Simpson and Thompson (2009) found that menopausal symptoms were not predictive of coping styles, but psychological stress appraisal was. In a qualitative study of 30 Australian women seeking to define how women cope with their menopause, Kafanelis and colleagues (2009) noted that the coping strategies women used were multidimensional, and that coping was a flexible process that targets specific situations as they arise. They concluded that “the experience of menopause is not static or homogenous. Rather, it is constantly affected by one’s specific beliefs, personal situations, experiences, life events, and personality traits” (p. 37). Indeed, coping with vasomotor symptoms seems a dynamic, fluid and multi-faceted process, both responsive to and predictive of the experience of VMS, and this process is most likely influenced by a range of physical, psychological, emotional, and social factors.

**Conclusion**

Many physical and psychological symptoms have been attributed to the menopause, but the consensus appears to be that vasomotor and urogenital symptoms are the only symptoms directly associated with the endocrine effects of the menopause. Other symptoms, such as depression or osteoporosis, are likely to be more related to a range of factors, including prior history of mental illness, aging, mid-life stresses, and so forth. Women in some cultures appear more protected from the negative effects of the menopause by virtue of local biologies and the social and the psychological meaning attributed to the climacteric, but it is equally important to note that, across the world, there is a fairly consistent reporting of experiencing vasomotor symptoms, although there are large differences between prevalence rates (Boulet, Oddens, Lehert, Vemer, & Visser, 1994; Freeman & Sherif, 2007) and how flushes are experienced. Studies both within and between cultures, as well as subjective/objective HF measurement concordance studies, demonstrate, however, that there is a substantial mediation process that takes place between the measurable physiological occurrence of vasomotor symptoms and the subjective experience and subsequent reporting of VMS. Many endogenous and exogenous factors have been identified that may impact on the way
vasomotor symptoms are experienced, both in frequency and bothersomeness. Anxiety and depressive mood are often presented as a consequence of the menopause, but may also be predictors of the experience.

Women use a range of coping strategies to alleviate the heat generated by VMS, but the most efficacious treatment for hot flushes remains HRT. However, since the release of the WHI on the adverse effects of HRT, interest in alternative pharmacological and non-pharmacological treatment has risen. Despite this increased interest, there is still a lack of high quality research in non-hormonal treatments, and the results from existing studies have shown limited or mixed support. CBT has emerged as a valid treatment for the VMS, and several RCT have shown promising results. Nonetheless, the relationships between endogenous cognitive and emotional factors, beliefs about the menopause, coping mechanisms and hot flushes are still poorly understood. The next chapter will consider how the manner in which women develop representations of their menopause can shape their experience of vasomotor symptoms.
CHAPTER 3

MENOPAUSE: HISTORICAL CONTEXT AND REPRESENTATION

An important concept in symbolic interaction theory is W. I. Thomas’s (Thomas & Thomas, 1928) famous statement illustrating the significance of the subjective in social interaction: "if men define situations as real, they are real in their consequences" (p. 572). Thus, if menopause is assigned a certain meaning and behavior is enacted based on that meaning, the consequences are real regardless of whether the meaning is "right". Individuals will react to menopause and the women experiencing it in terms of the meaning they impute to it.

(Estok & O'Toole, 1991, p. 28)

Chapter overview

This chapter is concerned with the experiential aspects of the menopause and how women form internal representations of this significant stage of life. It starts with a brief section that defines representations and outlines Leventhal’s Self-Regulation Model of illness, a model that considers illness representation as a cornerstone for understanding health threat outcome (a more detailed account of Leventhal’s model, including previous studies that have tested the model as applied to the menopause, will be provided in Chapter 4). After considering the various sources of information that contribute to the formation of representations, this chapter then focuses on the macro-narratives of the menopause, first in a historical context, describing the prevalent association of the menopause with mental illness in the late 19th and early 20th centuries, and the medico-social framework within which Western women perceive what it is to be menopausal. It then considers the impact of the media and significant others on forming menopause representations. It is argued that the
discourse presented to women is highly biased towards the stereotyping of menopausal women. This leads to a review of the literature, mostly qualitative, that seeks to describe women’s representations of the menopause.

Beliefs, attitudes and representations: Definitions

In order to better understand the experience of the climacteric, research has focused on beliefs about the menopause (Berg, 1999; Hunter & Chilcot, 2013; Hunter & Liao, 1995), attitudes towards the menopause (Aksu, Sevînçôk, Kücük, Sezer, & Oğurlu, 2011; Avis & McKinlay, 1991; Papini, Intrieri, & Goodwin, 2002) and menopausal representations (Delanoë, 2001a; Gupta, Sturdee, & Hunter, 2006; Hunter & O’Dea, 2001; Smith, Mann, Mirza, & Hunter, 2011). The body of research is, however, confusing at times, as few studies have explained why they have selected one concept over another, and the terms beliefs, attitudes or representations are often used interchangeably. Indeed, they are tightly intertwined and have reciprocal relationships, yet, there are subtle but important differences between the terms.

Beliefs can be defined as “states that link a person or group or object or concept with one or more attributes, and this is held by the believer as true” (Frijda, Manstead, & Bem, 2000, p. 5). Conventionally defined, an attitude “is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour” (Eagly & Chaiken, 1993, p. 1). Defined in simple terms, a representation is "something" that substitutes something else" (Greco, 1995, p. 247) or it “represents something as being a certain way” (Perner, 1991, p. 15). All three terms have a cognitive component, and require a subjective evaluation or perception. However, whereas beliefs can be verified or falsified by an external objective source, attitudes are evaluative and do not require justification or endorsement. Representations and beliefs are closely related and often undistinguishable, but representations are necessary precursors to beliefs: one need to represent in one’s mind an object or a concept before one holds it as true (Schwitzgebel, 2010).

A more complex definition of representation encompasses the concept of representational system, which functions “to indicate how things stand with respect to some other object, condition or magnitude”(Dretske, 1988, p. 52). This later definition alludes to the functional aspect of representation. According to Greco (1995), representations are internal
substitutions that have two main functions: storing past perceptions or behaviour and importantly, anticipating future perceptions or behaviour. In other words, representations allow us to cope with past and future events. They precede action, formation of beliefs or attitudes. Because they are symbolic, representations exert their causal power through interpretative processes. As Perner (1991) puts it, representations “need to be not only caused by the external world but also “interpreted”, which in the case of mental representations needs to be understood non-intentionally as “causally influencing behaviour” (p. 24). Making representations is a language based internal process, and Perner (1991) and Drekste (1988) both argue that it is prone to be flawed because of divergence between reality and perception. As such, representations are not necessarily mirrors of reality, but abstractions, simplifications, misrepresentations or even illusions (Greco, 1995). To summarise, representations are symbolic substitutions for perceived reality that serve to store and anticipate past and future perceptions and behaviour, analogised as coping, through an interpretative process that, because of subjectivity, may lead to misrepresentation.

What are health threat representations?

Just as people construct representations of the external world, they also develop models of illness that allow them to predict illness trajectory. Seminal work by Leventhal and colleagues (Leventhal et al., 1992; Leventhal, Meyer, & Nerenz, 1980) concluded that people hold parallel cognitive and emotional representations of their illness, which can predict outcomes via the mediating process of the coping strategies they use to deal with their condition. He proposed a dynamic model, in which people self-regulate through continual appraisal of illness outcomes and readjustment of representations and coping. The underlying idea is that individuals with positive illness representations would have more adaptive illness outcomes, and, conversely, those who represent their illness negatively would report more negative outcomes. This idea has been supported by Hagger and Orbell (2003) in a meta-analysis of studies using Leventhal’s model, although it is worth noting that the cross-sectional design in most studies included in the review precludes any conclusion as to the causality of the illness cognition-illness outcome relationships. Moreover, as pointed by Dempster, Howell and McCorry (2015), who also reviewed studies using Leventhal’s model, a risk of tautology may occur with the emotional representation when illness outcomes are measured in term of
psychological distress or related variables, further highlighting that conclusions on any directional relationship must be cautiously made.

Leventhal suggested that cognitive representations of illness contain five core components: a cause (the aetiology of the illness), an identity (the symptoms attributed to the illness), consequences (personal impact of the illness), a timeline (duration, acuteness, chronicity) and control/cure\(^5\) (the extent to which the illness can be treated). There is strong support for the suggestion that illness representations provide a useful framework for understanding health outcomes for a large number of illnesses, including multiple sclerosis, epilepsy, diabetes, breast cancer, fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis and systemic lupus erythematosus (Anagnostopoulos & Spanea, 2005; Glattacker, Opitz, & Jackel, 2010; Goodman, Morrissey, Graham, & Bossingham, 2005; Kemp, Morley, & Anderson, 1999; Moss-Morris & Chalder, 2003; Searle, Norman, Thompson, & Vedhara, 2007; Vaughan, Morrison, & Miller, 2003).

**Sources of menopausal representations**

Menopause is not an illness, but a natural life transition. Nonetheless, just as people hold illness representations, women hold a menopausal representation long before their reach this stage of their life, and this internal representation influences their experience of the menopause, including that of vasomotor symptoms (Avis et al., 1997; Collins, 2002; Hunter & Chilcot, 2013; Hunter & Mann, 2010). But how are those beliefs acquired in the first place? Leventhal and colleagues offered some clues by identifying three basic sources of information that guide the representation of a health threat: a general pool of ‘lay’ information gathered by individuals from social communication and cultural knowledge, external information from authoritative sources or perceived significant others, such as a doctor or a spouse, and the individual’s own somatic or symptomatic information obtained from previous personal experiences (Leventhal et al., 1980; Leventhal, Nerenz, & Steele, 1984). Although universal, the menopause is a unique lifetime experience, and clearly, women must rely on other sources but their own to form representations of the menopause.

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\(^5\) The dimension of Control/cure was subsequently identified by Lau and colleagues (1989; 1983).
Research shows that between 40 to 70 percent of women seek advice about their menopausal symptoms from medical practitioners (Donati et al., 2009; Keenan et al., 2003; Nedrow et al., 2006; Williams et al., 2007) and, given the high level of trust between patients and their physicians (Mainous, Baker, Love, Gray, & Gill, 2001), it is likely that medical practitioners have a significant impact on the formation of health threat representations, including that of the menopause. Indeed, menopause research shows that women seeking help for their menopausal symptoms ranked physicians highly for trustworthiness, helpfulness, and knowledge (Huston, Jackowski, & Kirking, 2009). Another important source of information about the menopause comes from the media, including books, magazines and, increasingly, the internet (Donati et al., 2009; Duffy et al., 2012). Print media is a primary determinant of health attitude change (Wright, 1975), and media influence has recently been demonstrated in the change of women’s attitudes towards using hormone therapy (McIntosh & Blalock, 2005). Lyons (2000) argues that the study of media texts and images is important in understanding health representations because media influence and shape people’s beliefs, as well as inform consumers’ experience. How the print media may influence menopausal representations will be revisited in greater detail later in this chapter.

Finally, another influence that may shape menopausal representations is the experience of other women. There is evidence that older cohorts of women have been reluctant to talk about the menopause because they are not comfortable discussing issues relating their body and sexuality or the emotional instability associated with the menopause, which are issues they often consider to be private matters (Utz, 2011). In a comparative qualitative study of African-American and Euro-American women, Agee (2000) found that virtually no Euro-American women received knowledge about the menopause from their mothers, aunts, or grandmothers. Another qualitative investigation of French women aged 42-62 by Vinel (2008) drew similar conclusions, and adds that, in the absence of discussion about the menopause, women are left with representative images of their mother’s menopausal experience, often forecasting from this the observable aspects of the menopause: the age at which they will reach the menopause and how they will experience hot flushes.

Both studies identified that when discussion does take place amongst women, it tends to focus on medical treatment. Thus, while technical aspects of the menopause are discussed, existential or social aspects of the menopause tend to be ignored and “[...] women often found themselves alone to face this phenomenon and the numerous information, often contradictory, that they receive from the medical profession or the press” (Vinel, 2008, p. 15).
Information about the menopause: A source of confusion

Focus group data from a study conducted by Buchanan and colleagues (2002) revealed that uncertainty about menopause is perpetuated throughout the lifespan by friends, family, physicians and the media. Certainly, there is some evidence of confusion relating to the menopause, its terminology, and its treatment, both within the medical profession and the general public. For instance, several researchers have highlighted the lack of consistency across medical research when using menopause terminology (Mitchell, Woods, & Mariella, 2000; Utian, 1999), and a statement by the International Menopause Society highlighted the need for uniformity of terminology “to limit whenever possible the confusion that might arise from a misuse of terms, as sometimes occurs” (Utian, 1999, p. 284). The 2001 and 2011 STRAW conferences attempted to reduce some of the confusion by developing the staging system described in the previous chapter (Harlow et al., 2012; Soules et al., 2001). However, several surveys of health professionals support the view that information about the menopause can be confusing, especially in regard to treatment. For instance, a survey of 556 reproductive health professionals conducted in 2004 by the American Society for Reproductive Medicine (2004) showed that nearly 100% of practitioners agreed that their patients were confused about menopausal treatments, and 73% believed that confusion was increasing. Other surveys of specialist and general practitioners also suggested that the publication in 2002 of the Women’s Health Initiative on HRT had increased uncertainty about the risks and benefits of menopausal treatment, and that confusing messages regarding the climacteric was the most challenging aspect in patient communication (Bush et al., 2007; Singh et al., 2005). Since 2002, however, menopause health organisations have been proactive worldwide in providing guidelines for hormonal therapy in order to alleviate much of the confusion (de Villiers, Gass, et al., 2013; National Institutes of Health, 2005b; Schmidt, 2012).

The definition of menopausal stages may offer a common language for researchers, but accepted nomenclatures may in fact add confusion to women trying to define their own menopause. Dillaway and Burton (2011) interviewed 98 American Midwestern women, who self-identified as ‘menopausal’ or ‘in menopause’, and found that many were confused and frustrated by the lack of clear markers corresponding to the various menopausal stages, especially the postmenopausal stage. The authors concluded that “[…], definitions of perimenopause, menopause, and postmenopause did not always make sense when matched against [women’s] understanding of their own bodily transitions.” While most women
accepted the biomedical definitions, many believed erroneously that being postmenopausal meant being free of hot flushes, and were disheartened when their symptoms did not recede at cessation of menses.

Patient education is one critical outcome of successful medical interactions (Ragan, Beck, & White, 1995), and inadequate information, common in less positive interactions, may affect women’s perceptions of the menopause and the decisions they make about treatment (Buchanan et al., 2002). The issues surrounding the menopause are complex and can be difficult to address for health professionals, especially during time-constrained visits. Studies show that, in general, Western women’s knowledge about the menopause and treatment is limited, and this is consistent across time and countries (Clinkingbeard, Minton, Davis, & McDermott, 1999; Depypere et al., 2016; Donati et al., 2009; LaRocco & Polit, 1980; Lindh-Åstrand, 2009; Polit & Larcocco, 1980; Utian & Schiff, 1994). Data from these studies indicate that women with higher education tend to be more forthcoming in seeking information and be more knowledgeable. While most women seemed satisfied about the information they obtained from their health providers, many women also found information about HRT confusing. The increased use of the internet by women to obtain information about the menopause may contribute to some of the confusion. In an analysis of web-based information of the menopause and HRT, Reed and Anderson (2002) found great disparity across websites in the quality of information provided and recommended against the use of commercial sites that may be biased towards particular products.

**The macro-narrative of the menopause: The mad, the sick and the ugly**

A significant source of information identified by Leventhal et al. (1992) is a collective pool of ‘lay’ information. Shared knowledge is often rooted within socio-historical contexts, and this is particularly true in health where, with the rise of scientific bio-medicine from the 19th century onwards, “the study and treatment of disease became separated from the individual and located within body systems only understood by experts [...]” (Bury, 2001, p. 266). Indeed, several papers have highlighted the importance of understanding the macro-narrative of illness, pointing to the necessity to locate personal illness experiences in historical and socio-political “collective” contexts that feed gendered norms and stereotypes (Bendelow, 1993; Carricaburu & Pierret, 1995; Ville, Ravaud, Diard, & Paicheler, 1994). Stereotypes are defined as “beliefs
about the characteristics, attributes, and behaviours of members of certain groups” (Hilton & von Hippel, 1996, p. 240), and, in the process of stereotyping, individual information is lost at the profit of group characteristics, whereby each member is seen to possess a range of attributes of the group (Spears & Haslam, 1997). Stereotyping often gives rise to prejudices and stigmatisation against the stereotyped group, i.e., being discredited because of unwanted or undesirable attributes seen as deviating from the norm (Jones, Farina, Hastorf, & French, 1984). In turn, stigmatisation may also lead to internalization of stereotypes by those who are stigmatised, thus affecting beliefs held about themselves or their condition (Biernat & Dovidio, 2003).

Limited, but salient, research has tested if menopausal women are being stereotyped. The first study conducted in this field was by Muhlenkamp, Waller, and Bourne (1983), who asked 152 women aged 18 to 55 years-old to rate vignettes depicting middle-aged men and women on a semantic differential (e.g. warm/cold, weak/strong, and giving/holding). Results showed no difference in the ratings between menopausal versus non-menopausal vignette characters. Yet, in their review of medical literature spanning from 1984 to 1994, Rostosky and Travis (1996) asserted that “Popular images and stereotypes of women in the menopausal age range are overwhelmingly negative” (p. 285). Marcus-Newhall, Thompson and Thomas (2001) tested menopause stereotyped beliefs in two studies that surveyed various ages in the general population and undergraduate students. They found strong support for a widespread and specific negative stereotype that associated menopausal women with undesirable characteristics, such as negative emotions and moodiness. Two recent studies focusing on perceptions of women across reproductive stages also found evidence for negative connotations associated with menopausal women. Both studies surveyed college students in the United States and Mexico and, while the authors acknowledged participants’ general lack of knowledge about the menopause, results showed that menopausal women were seen as old and irritable in the first study (Marván, Islas, Vela, Chrisler, & Warren, 2008) and bitter, tense and old, although sensitive and feminine, in the second (Chrisler, Gorman, Marván, & Johnston-Robledo, 2013). Marcus-Newhall and colleagues (2001) concluded that negative cues received from others may impact on menopausal women’s thoughts and actions, and further suggested that stereotyped beliefs could be unconsciously adopted through implicit self-stereotyping, a process by which self-stereotyping is first internalised and then activated without one’s awareness (Levy, 1996).
The framework of social-representation theory (Duveen & Lloyd, 1990), which states that the formation of social representations is dependent upon social contexts and interactions, provides further evidence that representations women hold about being menopausal may be influenced by information conveyed by the media, health care practitioners and other social contacts. The theory further proposes that “social psychological phenomena and processes can only be properly understood if they are seen as being embedded in historical, cultural and macro social conditions” (Wagner et al., 1999, p. 95). The importance of understanding the macro-narrative in which menopausal stereotypes have been formed is thus important, as it is possible that, for some women, menopausal stereotypes contribute to shaping negative representations of the menopause, regardless of symptom experience.

A central agenda of feminist theory is to critique gender stereotypes (Jackson, 1998), and, before proceeding further, it is important to acknowledge the impact of the feminist discourse in the menopausal literature. The topic of the menopause has often been polarised between the medical model, with its focus on symptoms and treatment, and the emancipatory feminist model, which views the menopause as a significant, but positive rite of passage. Over the years, many feminist writers have been critical of the dominant medical model in what they viewed as a ‘pathologising’ of the menopause and a failure to consider the variety of women’s experiences (Im, 2007). Murtagh and Hepworth (2005) wrote an excellent analysis in which they trace the changing perspectives of the medical and feminist models. They asserted that modernist feminists in the 1980s and 90s denounced the medical view that menopausal symptoms define the menopausal experience and, as such, “refuted the logic and disrupted the link between loss of hormones, experience of symptoms and loss of femininity” (p. 280). Modern feminists have also strongly critiqued the medicalisation of menopause, or the construction of menopause as a disease, and viewed the use and promotion of hormone replacement therapy as exploitative and unethical.

The historical narrative of the menopause, which is provided in the next section, is partly informed by the divergent positions of the two models. Much of the literature, from feminists and other writers, has highlighted the controversy in which the menopause history is grounded, and at times, vehemently so. Illustratively, W.H. Utian, one of the founders of the International Menopause Society, remarked nearly 20 years ago in an article titled “Menopause - a modern perspective from a controversial history” that “The major milestones in the history of menopause provide a fascinating background to understanding our current
attitudes […]” (Utian, 1997, p. 74). In this short historical analysis of the menopause, Utian acknowledged the extreme negative views prevalent throughout the last century while contending that a few physicians attempted early on to view the menopause as a natural event.

**Menopause and mental health: A historical account**

Traditionally, menopause and mental health have been seen as linked. An early account of the association of the menopause and mental illness is illustrated by E.J. Tilt, a founder and President of the Obstetrical Society of London, who wrote the first English medical book on the menopause, “The Change of Life in Health and Illness” successively published between 1857 and 1882. In the introduction of Chapter VII, “Disease of the brain”, Tilt (1882) refers to previous works by contemporary physicians Gardanne, Bedford and de Boismont who emphasised “cerebral affections” during the change of life, including the prevalence of headaches, intensity and eccentricity of nervous symptoms, transitory delirium and insanity of frequent occurrence. The table below (Figure 1), reproduced from the chapter, shows the frequency of “cerebral diseases” suffered by 500 menopausal women surveyed by Tilt. Commenting on the high incidence of hysterical states in this table, Tilt writes that “hysterical symptoms are much less common amongst the poor and that they occur most frequently when the nervous system of women is wrought up to an artificial state by luxurious living, by overwork of the mental faculties, and still more by the over-development of emotion” (Tilt, 1882, p. 174). On the other hand, Tilt points out the low rate of insanity in his sample, but remarks that between 1845 and 1853, 437 out of 1,320 women admitted at the Bethlem Royal Hospital, a mental asylum in south eastern London, became insane between the age of 40 and 55 years-old. He also agrees with his colleagues that some insanity at mid-life must be caused by the cessation of menstruation, because other conditions, such as headaches, pseudo-narcotism, hysteria and epilepsy, are also thought to be caused by the change of life. Though Tilt does not list them in the table, he believes that hypochondriasis, often encountered during the menopause, “may be considered as an exaggeration of some of the symptoms of the change” (p. 184), and melancholia “is induced by plethora of the portal

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7 This assumption was challenged by a survey of 1,000 women organised by the Medical Women’s Federation between 1926 and 1933, which suggested that leisured women with higher standards of living had fewer menopausal symptoms (Strange, 2012).

8 The age of the menopause is believed to have increased over the last 100 years in Western industrialized countries, with an average age of 44.6 years in 1862 (Flint, 1978).
system and by ovarian misrule”, although he admits that “these physical causes would not produce insanity without cerebral predisposition and the concurrence of psychological causes” (p. 185). He further makes tentative links between the menopause and a number of conditions, such as homicidal and suicidal mania, temper or uncontrollable peevishness, kleptomania, demonomania (Satanic possession), dipsomania (uncontrollable craving for alcohol) and impulse to deceive.

Figure 1. Frequency of cerebral diseases in 500 women at the change of life.

Tilt summarises bleakly, although eloquently, the menopausal woman on page 186:

The future then becomes a void, and despondency shows itself as boundless as the sands I have often watched at sunset from my desert tent. In the desert of her thoughts no refreshing fountain is heard to pour forth the melodious song of hope; no palm-tree promises relief against a scorching sun. She peoples the void with imaginary evils; hears strange voices where all is silent; feels awful forebodings, though nature smiles around her; and thus hopeless and full of fear, she will sit alone for weeks and months, in the darkened room of some gloomy dwelling, without any other enjoyment than solitude, or that of brooding over unbegotten evils, with mental faculties now paralysed, except when she hears the voice of conscience reproaching her with her inactivity, her sloth, and her want of faith in God.

Tilt can be commended for giving the first methodical account of the menopause based on numerous case studies and his own medical practice, and it would be presumptuous to critique his writings through today’s more educated lens. Indeed, it is important to
remember that he wrote at a time where the uterine theory of hysteria, which posited that hysteria resulted from “the reflex effects of utero-ovarian irritation”, had been accepted for over two thousand years, and was the most prevalent view during the 18th and 19th centuries (Smith-Rosenberg, 1972). For many physicians, the uterus was linked to the brain, and it was a short step to assert that mental illness could be caused by the onset of the menopause, even though bio-psycho-social pressures, such as physical ageing, parental care and what would nowadays be called “empty nest” stresses were already recognised as possible influences of distress (Tilt, 1882). The prominent idea of the time, supported by Tilt and other contemporary physicians, was that the female reproductive system was fragile and significant changes of that system, i.e. onset of first and last menses at puberty and menopause, would destabilise the vulnerable cerebral system of women (Dwyer, 1984; Tilt, 1882). This view, perhaps, sowed the seed for the stereotyping of menopausal women that has lasted ever since.

The link between the menopause and mental illness was strengthened in the late 19th century by the introduction of specific involutional disorders (i.e., disorders due to the regressive changes of the ageing body), thought to be linked to the menopause. Beard (1869), and later MacNaughton-Jones (1913), proposed that neurasthenia, or exhaustion of the nervous system, a psychopathology characterised by malaise, hysteria, hypochondriasis, headache, neuralgia and depressed mood, may appear during two vulnerable periods of women’s reproductive system, puberty and the climacteric. MacNaughton-Jones, however, believed that “lympathic” and “nervous” temperaments were key to developing the disorder and wrote “The congenitally defective child grows into the pubertal weakling, and the lopsided girl becomes the climacteric neurasthenic” (MacNaughton-Jones, 1913, p. 880). Conklin (1889) noted that 80 percent of female patients hospitalised for climacteric insanity showed symptoms of profound melancholia, either in the form of persecutory delusions, with homicidal ideations or characterised with guilt, anhedonia, depressed mood and suicidal ideations. He observed that a third of the women had a prior history of melancholia, but fell short of dissociating the menopause and insanity, suggesting that “[…], in some cases, the pelvic symptoms themselves are caused by, not the cause of, the nervous disorders” (Conklin,

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9 Nervous and lymphatic temperaments were two of the four temperaments described by phrenologists, the other two being sanguine and bilious. Temperaments were described with both physical and psychological characteristics. Lymphatic, or phlegmatic, temperament indicated “slowness and weakness in the vegetative, affective, and intellectual functions”, while nervous temperament was marked by “rapidity in the muscular actions, vivacity in the sensations”, and with “great nervous sensibility” (Spurzheim, 1826, p. 582).

10 Based on hospitalisation in Dayton Hospital for the Insane, Ohio, USA (no date provided by Conklin).
In 1890, in a short article titled “The Climacteric in its Relation to Insanity”, published in the American Journal of Insanity, a Medical Officer at the Utica State Hospital wrote: “The menopause is an aetiological factor in the case of every woman who becomes insane at or near that period; but its operation is only possible in the presence of “organic disposition” to disorder” (EG (Medical Officer), 1890, p. 73). Whilst, again, these views seem in this day and age somewhat archaic, they need to be understood within their historical context, when attempts to understand mental illness were in their infancy.

For medical and mental health practitioners, the causal link from the menopause to mental illness was well established by the end of the 19th century, and would remain so for a large part of the 20th century. In 1896, Emil Kraepelin, father of modern scientific psychiatry, considered a new depressive disorder, *involutional melancholia*, characterised by a rigid and obsessive personality, agitated depression and hypochondriacal or nihilistic delusions (Stewart, 2005). The disorder was commonly diagnosed in women at the age of forty to fifty years, and believed by some physicians to have an endocrine aetiology (Hirshbein, 2009; Werner et al., 1934). Prognosis was varied, although often poor, and hospitalisation common and lengthy (Hamilton & Ward, 1948; Hoch & MacCurdy, 1922). In absence of alternative available treatment, hormone and electric convulsive therapy treatments were routinely used (Fishbein, 1949; Suckle, 1937; Werner et al., 1934). The disorder was validated by the American Psychiatric Association for nearly thirty years when it appeared in the DSM-I under Disorders due to Disturbances of Metabolism, Growth, Nutrition or Endocrine Function” (APA, 1952) and was reclassified in the DSM II under “Affective Psychosis” (APA, 1968). It was removed from the DSM-III (APA, 1980) because research showed there were no distinctive depressive symptoms, or peaks in depression or suicidal rates during the climacteric, and because, as it is the case in women at other life stages, menopausal women often had a history of depression or life stress precipitants (Weissman, 1979; Winokur & Cadoce, 1975). Some researchers, but by no means all, now agree that the menopause transition may present a “window of vulnerability” for depression and that this stage is also a critical “window of opportunity” for the success of hormonal therapy (Freeman, 2010; Maki et al., 2010; Soares & Maki, 2010).

**The medicalisation of the menopause: The “hormone deficiency disease”**

By the 1930s, endocrinology, an emerging branch of biology and medicine, became the framework to understand women’s reproductive life cycle and remodelled the menopause as a “hormone deficiency disease” (Strange, 2012). The first account of hormone therapy dates
back to 1897 when Dr. Fosbery prescribed “five-grain doses of Ovarian Gland three times a day” for the treatment of hot flushes (Fosbery, 1897, p. 88). He noted that the flushes “were nearly cured by the time three dozen doses were taken” (p. 88), but the treatment received mixed support in the oncoming years, and high production costs made the therapy only available to the wealthiest (Compton Burnett, 1898; Perkins, 1910). The isolation of oestrogen and progesterone in the 1920-30s and subsequent development of synthetised oestrogen drugs, such as Diethylstilbestrol (DES), allowed for the widespread treatment of hot flushes (Watkins, 2007).

By the 1960s, hormone replacement therapy had become the treatment of choice for menopausal symptoms. Today, HRT continues to be the most efficacious treatment for vasomotor symptoms, and is also recommended to menopausal women for osteoporosis, vaginal symptoms, such as vulvar and vaginal atrophy, and depressive symptoms, as HRT reduces hormonal instability and helps to improve sleep (Bowring & Francis, 2011; Hlatky, Boothroyd, Vittinghoff, Sharp, & Whooley, 2002; Panay et al., 2013; Schmidt, 2012). While HRT offers great relief to many menopausal women, it is argued that the reframing of the climacteric as a deficiency disease has perpetuated the stereotyping of the menopausal woman, since, in conjunction to alleviating flushes, HRT also became seen as a means to restore loss of attractiveness and femininity (Bell, 1987). The “insane woman” became the “deficient woman”, a notion which, contends Bell (1987), was constructed by a small, elite group of American medical professionals in the 1930-40s against the background of persistent sexist values about menopausal women.

While the Victorian woman was seen as a fragile being whose psychological equilibrium depended upon her endocrine balance, the Western woman of the mid-20th century was framed as feminine, subservient, domesticated and family bound (Chafe, 1991). Her role was to nurture the male to whom she was compelled to be an attractive sexual partner, and, as argued by Niland (2010), one of the medical profession’s prerogatives was to maintain the female mystique and domestic servitude beyond the reproductive years. A strong protagonist in disseminating this idea was gynaecologist Dr. Wilson, whose best seller *Feminine forever* aimed at persuading physicians and their patients that hormone replacement therapy was not only helpful, it was necessary for women to maintain their femininity, youth and sexual attractiveness. Nineteenth century women’s faulty reproductive system, asserted Niland (2010), was replaced by the 20th century faulty post-reproductive system. In an
excellent analysis of metaphors of the menopause in medicine, Niland (2010) argued that the current positivist and biological views of the menopause associated with the “failure in the production of oestrogen”, framing “the woman as a ‘patient’ in need of treatment” (p. 66), is highly prevalent in contemporary medical textbooks. She concluded that this reductionist view has led to an “imagery of the body as a hierarchically organised system [that] leaves women in menopause associated with breakdown, decay and atrophy” (p. 26).

In a survey of general practitioners, Liao, Hunter and White (1994) found that 50% of GPs agreed that the menopause was best seen as an oestrogen deficiency condition, while 17% were undecided. However, a study focusing on physicians and middle-aged women’s views about midlife women experiences conducted by DeLorey (1989) found vast discrepancies between physicians and their patients’ perception of the menopause, with physicians identifying the menopause mostly as a health problem while their patients did not. The author concluded that “Physicians have a distorted perception of menopause not because of any intention but because their information sources are distorted”.

Communication with health physicians is central to how women perceive and describe their menopausal experience, and how they form conceptions (or misconceptions) about it. Ragan, Beck, and White (1995) stressed that the pedagogical role of health care professionals is important for both health outcomes and patient satisfaction. Positive relationships foster open discussions about issues of climacteric, but inadequate information flow may affect women’s perceptions of the menopause, and decisions about their own health (Buchanan et al., 2002). Women may consult physicians for severe menopausal symptoms and
are likely to expect them to be a reliable source of information for treatment, however, Liao and colleagues (1994) found that only 4% of general practitioners rated their knowledge of the menopause as very good. Given the high level of trust between doctors and patients, it is legitimate to wonder how the framing of the menopause as a disease, clinicians’ bias and perceived lack of knowledge by some physicians may influence women’s perceptions of the menopause.

The bio-medical model is understandably focused on treating symptoms, however, several papers have recently recommended that physicians move away from considering the menopause as an oestrogen deficiency disease, and encouraged medical professionals to consider the menopause beyond the strictly therapeutic context (Allen & Mansfield, 2004; Lachowsky, 2002). The shift towards a more encompassing understanding of the menopause can be explained by several factors. First, since the release of the Women’s Health Initiative survey results in 2002 (Rossouw et al., 2002), there is strong evidence that medical practitioners have altered the way they prescribe HRT worldwide, with main changes seen in more rigorous risk/benefit assessment, discontinuation or shortening of duration of therapy, lowered hormone dosage, and change in medication regimes (Barbaglia et al., 2009; Blümel et al., 2004; Fournier, Kernaleguen, Panjo, Clavel-Chapelon, & Ringa, 2011; Kang et al., 2006; Steinkellner et al., 2012). Second, Murtagh and Hepworth have (2005) argued that developments in medical, feminist, anthropological, epidemiological and sociological fields have all contributed to changes in both medical and feminist views since the turn of the century. Postmodern feminists are now more concerned with epistemological underpinnings of the menopause and the diversity in women’s experience of the menopause, while medical practitioners are positioning “women as ‘informed decision-makers’ responsible for their ‘choices’ about health care and health outcomes at menopause and beyond” (p. 286) (although the increased confusion about menopausal treatments suggests that choice may not always be best informed). In their analysis of menopause discourses, Coupland and Williams (2002) concluded that the feminist view has had a powerful influence on the way women interpret their menopause. As women reflect on seeing the climacteric as a time of gain rather than loss, it is probable that a new dialogue between physicians and patients is, or will be, taking place, and this is likely to foster a more holistic approach in treating menopausal symptoms.
The WHI findings have led many women to discontinue oestrogen therapy (Hing & Brett, 2006) and approximately 50-80 percent of women use alternative therapy at some time (Bair et al., 2008; van der Sluijs, Bensoussan, Liyanage, & Shah, 2007). Regrettably, the image offered by alternative medicine has provided little improvement on the one proposed by traditional medicine. While the discourse on alternative therapy rejects the use of HRT and recommends active therapeutic control and healthy lifestyle, it mirrors closely the medical discourse with its emphasis on hormonal imbalance, which can be restored with the expert advice of the herbalist, as opposed to the expert advice of the pharmacologist or physician (Coupland & Williams, 2002). Furthermore, Lyons and Griffin (2003) argued that the language used by alternative therapy protagonists is confusing, as it does not succeed in presenting a substitute for the concept of “deficiency disease”, thus conflating the representation of menopause as a potential source of puzzlement or anxiety. As Niland (2010) concluded: “[…] ‘alternative therapy’ discourse is just as ageist as the biomedical discourse, because it positions women to defend themselves against their ageing bodies.” Adding to this bias, a recent survey conducted by Sowter and colleagues (2016) assessed 39 websites for their quality and content of health information on herbal remedies for menopausal symptoms, and found that, overall, the quality and information coverage were poor, and the required reading level high.

Ageism affects menopausal women in both public and private spheres

Menopause is part of the natural process of ageing and for many women, it corresponds to the start of physical decline, with, for instance, increased risks of developing metabolic syndrome (Carr, 2003) and osteoporosis (Tankó et al., 2005). While many postmenopausal women see the menopause as a culturally significant indicator of their ageing, and often describe the menopause in terms of bodily change, they do not necessarily equate the menopause with negative aspects of getting older (Dillaway, 2005a, 2005b; Netz, Zach, Dennerstein, & Guthrie, 2005; Warren, 2009). Despite these positive perceptions, research suggests that the menopause is often associated with ageism in both the public and private spheres.

In contrast with some cultures where menopause is a positive social marker, such as achieving higher status (Lock, 1994), Mansfield and Voda (1993) remarked that, in Western culture, there is no sense of achievement or elevated status associated with becoming menopausal. In fact, the association between the menopause and ageism is evident in the workplace, as highlighted by the recently published Women at Work Study (Jack et al., 2014),
which surveyed 839 women aged 40 years and over, in academic, administrative and executive level roles at three Australian Universities. Results showed that many participants felt anxious about highlighting menopausal symptoms with their managers and colleagues because they feared being stereotyped as ‘aged’. The study also found that women often felt ‘invisible’, ‘looked over’ or ‘not even thought about’ at times of promotions, and that “once they had reached menopausal age, they were no longer physically or intellectually desired and this manifested in day-to-day work interactions” (p. 16). Similar conclusions have been drawn from public reports focusing on aged workers in the United Kingdom and Australia (Altmann, 2015; Australian Human Rights Commission, 2010).

In a personal sphere, menopausal women are also subjected to ageism through the self-imposition of cultural norms. Social expectancy theory proposes that cultural values contribute to how individuals perceive and evaluate others, and this influences others’ self-evaluation (Jackson, 2004, as cited in Sabik, 2015). In a feminist analysis of women ageing, Garner (1999) proposed that Western societies associate women’s worth with physical attractiveness, which itself equates to youthful beauty. As such, older women are culturally devalued and their ageing bodies judged harshly by others and themselves. Indeed, in an open-question survey on menopausal beliefs responded to by 505 middle-class mostly Caucasian women aged 35-55, Mansfield and Voda (1993) found that worrying about loss of physical attractiveness was a common theme expressed by the women surveyed. The authors noted that many participants’ worries about the menopause reflected sexist and ageist stereotypes prominent in the media, and that women themselves had incorporated these stereotypes into their thinking. The importance of perceived loss of attractiveness at the time of the menopause was also highlighted by Fauconnier, Ringa, Delanoë, Falissard and Bréart (2000), who found that many women chose hormone therapy as a beauty care remedy beyond their need to manage menopausal symptoms. A number of researchers have suggested that women may be influenced by the message constructed within the medicalisation and anti-ageing discourse. For instance, European prospective studies on the use of HRT have also highlighted that women were more concerned with issues relating to self-image and sexual identity than medical risks at the time of the menopause (Graziottin, 1996).

It is interesting to note that the importance for women to address the ageing process related to the menopause is paralleled by negative attitudes young women have towards the menopause, and that they are more likely to attribute a negative impact to the menopause than
older women (Smith et al., 2011). Haug (1987) lamented that women’s groups gathered to discuss positive meanings of the menopause would quickly shift conversations to “slimming treatments, body care and sexuality” concluding that although women were attempting to break away from the dominant value system, they would become unwittingly embroiled in “reproducing the conditions under which the social meaning of the menopause, as a time of bodily decline, holds sway” (p. 258). The fact that women worry about loss of attractiveness is not surprising, given the predominant body objectification and obsession with youth in Western societies, where demands for cheaper, easier means to remain young and healthy are consistently increasing. The latest statistics published by the American Society of Plastic Surgeons (2012) provide a good illustration for this: while cosmetic surgery procedures have decreased by 16% between 2000 and 2012 in the United States, minimally invasive cosmetic procedures have increased by 137% in the same period, with Botox use increasing by 680%!

**Menopausal representations in the media**

Understanding media content is important because public depictions of the menopause act as silent contributors that tap into women’s subconscious and help define their menopausal representations. In her analysis of 177 Australian outdoor advertisements, Rosewarne (2009) found that less than 4% of women photographed appeared older than 30 years-old, as opposed to over 17% of men. This type of ageist stereotyping of women and the promotion of young attractive women, argued Saad (2004), is justified because marketers seek to maximise the effectiveness of their message to their relevant audience, males and females, and this is coherent with Darwinist evolutionary theory. Whitteaker (1998), however, pointed out that the media uses fictitious, femininely attractive representations of the menopause that are defined historically and culturally within a patriarchal society at the expense of women’s own lived experience of menopause.

Several examinations of representations of midlife and menopausal women conducted in the United States and Australia by analysing advertising and editorial content in print media have also supported the idea of ageism and confusion related to the menopause (Gannon & Stevens, 1998; Hust & Andsager, 2003; Kaufert & Lock, 1997; Shoebridge & Steed, 1999; Whittaker, 1998). Despite an increased coverage of the menopause, the information in the media remains limited (Gannon & Stevens, 1998). Women’s magazines tend to portray a more adaptive image of
the menopause and seek to help women prepare and cope with the transition, whilst news media focus on a medical information and report scientific developments (Hust & Andsager, 2003). Gannon and Stevens (1998), however, found little variability in the information provided, and that almost all media portrayed the menopause negatively, as a disease needing treatment. Similarly, Shoebridge and Steed (1999) noted that media content exploited and conveyed ageist menopausal representations of physical and mental ill-health, vulnerability and decay, and also focused on disease management. Important factors related to the menopause such as ageing, stress, life-style and ethnicity were found to be largely ignored (1998).

Kaufert and Lock (1997) argued that a change occurred from the 1970s onwards, when menopausal women were represented as depressed and sick, to the 1990s, when they were shown glowing with fitness and as a picture of health. The message appears to be the same however: menopause renders women ill and decrepit, but should they take control, they can remain young and healthy. A similar message was found by Whittaker (1998) in some pharmaceutical and medical advertisements, which used unattractive female visual depictions (for instance, a disjointed portrait by Picasso) morphing into a beautiful woman (a Venus by Botticelli) to promote the sale of hormone therapy. Feminist texts have been critical of the marketing strategies used by pharmaceutical companies (Sherif, 2013), and while using youthful images to promote therapeutic products is not confined to menopause treatments, the anti-ageing benefits implied by drugs companies are particularly insidious as they directly tap into and perhaps exploit women’s vulnerabilities.

Despite the overwhelming representations in the advertising media of young beautiful women, there is an increasing number of middle-age or older women who offer models of positive ageing. Accomplishments by powerful women like Condoleezza Rice, Hillary Clinton, or Angela Merkel, or images of talented actresses, such as Helen Miren, Judy Dench, Meryl Streep or Susan Sarandon, all remind us that women continue to contribute greatly as they age. There is certainly evidence that women are slowly resisting the negative pervasive messages associated with ageing and the menopause. In a qualitative survey of 21 Australian women, Perz and Ussher (2008) showed that, for most, midlife experiences were positive, and associated with increased confidence, wisdom, self-awareness and self-worth. Other researchers have found similar positive concepts of inner growth and freedom, pointing out some women used the menopause as a trigger for healthier lifestyle change (Breheny & Stephens, 2003). Nonetheless, an
elegant qualitative study by Utz (2011) shed some light on a possible cohort effect influencing perceptions of the menopause. Utz compared the narratives of 24 pairs of menopausal Caucasian mothers and daughters. The “daughter” sample was born in the early to mid-1950s and was roughly aged 50 at the time of the interviews, while the “mother” sample was born during the 1920s-30s, and was aged 68 to 80 at that time. The author found that the mothers had been mostly passive towards the menopause and had considered it as a life transition, akin to a personal rejuvenation, a ‘postmenopausal zest’. Conversely, the daughters had defined the menopause in terms of the physiological processes of the ageing body and been proactive in seeking treatment for symptoms. Utz concluded that the effects of the medicalisation of the menopause and related pharmaceutical industry had likely been influential in defining the menopausal experiences for the second generation of women, and had “played an undeniable role in the social construction and redefinition of menopause” (p. 149).

**Menopausal portrayal by significant others**

Last, but certainly not least, the role of partners and spouses in offering and reinforcing stereotyped views of the menopause should be considered. Generally, men endorse more negative stereotypes about menopausal women than women do, and tend to have more negative attitudes towards the menopause (Gannon & Ekstrom, 1993; Marcus-Newhall et al., 2001; Smith et al., 2011). Papini et al. (2002) specifically investigated how attitudes may be affected in the context of marital relationships in 169 mostly Caucasian married couples aged 30 to 67 years old, and, in line with previous research surveying men, found that husbands generally held more negative attitudes towards the menopause than their wives did. Interestingly, they found that women’s attitudes toward the menopause may be affected by the number of menopausal physiological and psychological symptoms their husband perceived them as having, suggesting that attitudes towards the menopause are influenced by the perceptions of significant others.

A qualitative research conducted by Delanoë (2001b) based on interviews of men aged 50 to 60 years old showed that most men thought the menopause was associated with psychological distress, most commonly depression, anxiety, and irritability. Thirty-eight percent of interviewees stated this association was strong or very strong for women in general but, interestingly, only 16% attributed psychological distress to their menopausal spouse or partner, and 18% to acquaintances. This suggests a negative bias used to represent the
menopausal woman, but that negative heuristics are challenged when qualitative observations are made and in-depth reasoning is used. In general, many men were or had been anxious in anticipation of their wife becoming menopausal. For those whose wife or partner had already reached the menopause, the language was often pejorative and stereotyped: she is “impossible on a daily basis”, “bitter”, and “sour-tempered”. Delanoë believed that men tended to attribute psychological distress to menopausal women as a means to protect themselves from their own ageing process and to the stereotype that women’s biology is associated with mental dysfunction. On a positive note, Duffy et al. (2012) found that the majority of menopausal women they surveyed felt fairly well or well supported by their spouse or partner, although one-fifth wished they received more support.

This brief historical analysis demonstrates that medical physicians have not taken a neutral position in regard to the menopause over the past 150 years but, rather, according to feminist literature, have constructed an idea of the menopause influenced by patriarchalism that has been consolidated by a youth obsessed media. It has often been argued that the biological model has perpetuated the notion of breakdown associated with the menopause without offering an alternative emancipatory representation of the menopause. Powerful images of emotionally unstable women, the concept of ‘deficiency disease’, and HRT presented as a saviour of the decaying body have helped creating a stereotype of the Western menopausal women as either ‘mad’, ‘sick’ or ‘ugly’. But is this stereotyping accurate? And how is it internalised within the beliefs system of menopausal women? Although the current study was not a study of menopausal stereotypes, the following section attempts to answer these questions to provide some context about menopausal representations, as possible internalisations of menopausal stereotypes are likely to influence beliefs women holds about the menopause. This section demonstrates that, against the odds, middle-age women have shown remarkable resilience and positivity in building their own representation of the menopause.

**Stereotypes versus representations of the menopause**

**Are menopausal stereotypes accurate?**

This is a difficult question to answer, as is any question relating to the accuracy of any stereotype. Accuracy of a large range of stereotypes have been fervently debated, and the validity of arguing for or against the accuracy of specific stereotypes (including menopausal
stereotypes) is difficult to assess due to the difficulty in determining appropriate criteria (Jussim, 1990). In relation to the climacteric, two common stereotypes seem prevalent: the “forgetful menopausal woman” and the “moody menopausal woman”. It is beyond the scope of this thesis to fully explore those two myths, but a brief literature review on the topic is appropriate, given their possible impact on menopausal representations. While there is a wealth of studies on ageing and cognition showing evidence of accelerated decline in some aspects of cognition after the ages of 50-60 years-old, including episodic memory (Nilsson, 2003; Verhaeghen & Salthouse, 1997), the relationship between the menopause and cognition has been seldom researched. Similarly, there are many studies focusing on mood disorders during the climacteric, but few studies have investigated the relationship between the menopause and daily emotional stability.

First, are women truly forgetful during the climacteric? Differences between genders exist for episodic memory, with men tending to excel on visuospatial episodic memory tasks and women performing better on verbal episodic memory tasks (Lewin, Wolgers, & Herlitz, 2001), but levels of estradiol has not been found to affect these differences (Yonker, Eriksson, Nilsson, & Herlitz, 2003). Weber, Maki and McDermott (2014) conducted a systematic review and meta-analysis on cognition during the perimenopause, with results showing no significant differences between menopausal stages on working memory, processing speed, semantic and immediate verbal memory. Postmenopausal women, however, performed more poorly than pre- and perimenopausal women on delayed verbal memory tasks, and more poorly on phonemic verbal fluency than perimenopausal women; effect sizes, however, were quite small. Given these results, the authors’ conclusion that “The menopausal transition is a time of increased vulnerability to cognitive declines” (p. 90) seems premature, especially given the number of limitations identified (only four cross-sectional studies were included, only one study used the STRAW+10 criteria, results conflicted across the only two studies that adjusted for history of depression, which can impact in cognitive performance).

Menopausal women, however, often report themselves increased forgetfulness during the time of the menopause transition (Maki & Henderson, 2016). Indeed, objectively measured VMS have been found to correlate with verbal memory (Maki et al., 2008), but longitudinal studies have shown that memory problems are transient, with decline during the menopausal transition and rebound during the postmenopausal period (Epperson, Sammel, & Freeman, 2013; Greendele et al., 2009). It is suggested that the memory deficits during the perimenopause may be
linked to oestradiol fluctuation at that time (Sherwin, 2005). Unkenstein (2013) compared subjective and objective memory performances in a cross-sectional design study that surveyed 130 women aged between 40 and 60 years old, and found that perimenopausal women performed at a similar level compared to pre- and postmenopausal women on a comprehensive battery of neuropsychological tests, but they were less satisfied with their subjectively perceived memory. Results also showed that perception of more frequent forgetting was associated with attentional capacity, as well as anxiety, depressive, vasomotor and sleep problems. This suggests that attentional overload, as well as psychological factors, either related to or independent from menopausal symptoms, may also play a role in the way women perceive their capacity to memorise during the menopausal transition. Interestingly, the author also found that negative memory appraisal correlated with negative attitudes towards the menopause, indicating that beliefs about the menopause may be linked to perceived decline in cognitive function.

Several hypotheses link mood swings or irritability with the menopause; they include the possible physiological impact of hormonal variations, the negative experience of vasomotor symptoms and sleep disturbance (Baker, Simpson, & Dawson, 1997). The evidence that women in the menopausal transition experience daily mood instability is mixed. Baker and colleagues (1997) found that perimenopausal women experienced more anxiety, as measured by the State-Trait Anxiety Inventory (STAI), than premenopausal women, and scores on the STAI correlated with sleep disturbance for perimenopausal women. There was no difference between the groups, however, in anger, confusion, depression, fatigue and tension as measured by the Profile of Mood States. In fact, Freeman and colleagues (2008) found that irritability and mood swings decreased rather than increased with hormonal changes during the menopausal transition, although they did increase for those women experiencing premenstrual mood syndrome.

This brief literature review shows there is little clear evidence to support the accuracy of a menopausal woman stereotype. However, qualitative research has often highlighted emotional and cognitive complaints from women themselves during this life transition (Dillaway & Burton, 2011; Hunter, Gupta, Papitsch-Clark, & Sturdee, 2009), and those subjective experiences should not be dismissed. Middle age is often a time of familial and occupational transition for women, and psychosocial pressures associated with these changes can be quite overwhelming. Decrease in muscle tone, increased pains and aches, coupled with menopausal
hormonal changes, may further contribute to increased stress for some women. Widespread menopausal stereotypes may also contribute to women feeling particularly vulnerable at this time of life. To what extent have these stereotypes been actually unconsciously adopted by menopausal women? Are menopausal beliefs or representations positive or negative given the internal and external pressures women face during the menopause? This is the topic of the next section.

**Menopausal representations reveal women’s resilience**

Very few studies have surveyed women’s menopausal representations (Chou & Schneider, 2012; Delanoë, 2001a; Duffy et al., 2012; Duffy, Iversen, & Hannaford, 2013; Gupta et al., 2006; Hunter & O’Dea, 2001), and only three have published detailed findings about them (Delanoë, 2001a; Gupta et al., 2006; Hunter & O’Dea, 2001). The first two studies (Gupta et al., 2006; Hunter & O’Dea, 2001) adopted Leventhal’s illness representation framework to survey women’s representations. The study by Hunter and O’Dea aimed at developing the Menopause Representations Questionnaire (MRQ), a menopause-specific scale adapted from Weinman and colleagues’ (1996) Illness Perception Questionnaire, while Gupta et al., who also used the MRQ, compared the experience of the menopause across multi-cultural groups, including 51 Caucasian women. The Caucasian women in both surveys were British, recruited from general practices, and of similar ages (45-55 years-old, mean age 52.3 in Gupta and colleagues’ study, and 49-56 years old, mean age 51.03 in Hunter and O’Dea’s study). Despite being at different menopausal stages, participants in both studies had all developed a cognitive representation of the menopause. Gupta et al. did not provide the average number of symptoms identified by women as part of their menopause (MRQ identity dimension), but Hunter and O’Dea reported that, on average, women reported between 11 and 12 symptoms. For both studies, mean responses were close to the mid-point on the short-time and long-time duration subscales, indicating participants were divided on how long their menopause would last. In general, women felt that they were quite in control and that they were managing their menopause well.

The third study by Delanoë (2001a) was based on responses from 1,721 questionnaires sent to French women aged 45 to 65 years old, as well as in-depth individual interviews and group workshops. From this data, the author identified three menopausal representation categories: 1) *negative or ambivalent* (39% of respondents) linked to regrets about fertility
and menstruation cessation, health decline, and loss of “aesthetic and symbolic assets”, 2) positive (17%), which conversely was associated with the cessation of menses and fertility, and the perception that the menopause was not linked to loss in health, aesthetic or symbolic assets, and 3) neutral (44%), which defined women for whom the menopause represented no change at all. Further analyses showed that professional, economically independent women tended to have a neutral representation, housewives from higher socio-economic groups had the most negative representation, and older working class women had the most positive representation.

Other qualitative studies provide further accounts of how women represent their menopause. Pimenta, Leal, Maroco and Ramos (2011b) analysed emergent themes from semi-structured interviews of 36 peri- and postmenopausal Portuguese women. They found that the strongest emergent theme was that women viewed the menopause as a normal or neutral phase of life cycle (28%). Other prevalent themes included positive aspects relating to the cessation of menses (17%), ageing (16%) and negative experience (15%). Researchers also asked what were the most positive and negative consequence(s) of the menopause. The majority of women (64%) believed cessation of menses was the most positive consequence, and nearly a quarter (22%) identified some kind of positive psychological changes, such as feeling more calm, confident, assertive or mature. One in four participants could not identify any positive consequence for being menopausal. When asked about negative consequence(s), responses were more mixed: disease appearance or aggravation (33%), negative physical (31%), psychological (28%) and sex life (28%) changes, weight gain (22%) and perception of loss (14%). Nearly one in five participants could not report any negative consequence and, surprisingly, only 22% of them viewed vasomotor symptoms as a negative consequence.

Hunter, Gupta, Papitsch-Clark, and Sturdee (2009) provided further analyses of open-ended question interviews conducted in Gupta et al (2006)’s original study (see above), and found similar themes regarding beliefs about the menopause amongst Caucasian women. For most, the menopause was seen as a normal life transition, with little change or bother, although it was considered a salient marking in reproductive status. Positive aspects of the menopause included relief and freedom from menses, but uncertainty about the future was a concern. Women acknowledged coping through sharing experiences, and believed that positive attitude and acceptance were helpful. Association with ageing, although not necessarily negative, was also a recurrent theme.
Taken together, these results indicate that Caucasian women construct various meanings for the menopause, but, overall, tend to have neutral or positive representations, which is largely supported by research on attitudes towards the menopause (Avis & McKinlay, 1991; Hemminki, Topo, & Kangas, 1995; Kaufert, Boggs, Ettinger, Woods, & Utian, 1998; Sommer et al., 1999). The literature about the menopause highlights the different paradigms within which the menopause has been constructed. Given the confusing and often negative social and medical messages surrounding the menopause, these results are a tribute to women’s assertiveness and resilience. This is well summarised by Houck (2006) in her epilogue on “Menopause at the turn of the twentieth century”:

“By demanding medical attention for menopausal symptoms, some women have refused to be derailed by the whims of their body. By refusing medical care or by denying the need for it, some women have challenged others’ construction of their bodies as pathological. By embracing the physical and psychological changes of their “second adulthood”, some women have surrendered to the “power” and “wisdom” of the aging female body” (p. 236)

Like schemata, representations are dynamic and fluid (Leventhal et al., 1992) and are continually adjusted to incorporate confirmatory or disconfirmatory information. In fact, it is likely that the menopausal representation becomes more positive as women transition through the menopause. This phenomenon may be explained by the impact bias, which is derived from the affective forecasting theory (See Wilson & Gilbert, 2003, for a more detailed account of the theory). The impact bias is the tendency to overestimate the intensity and duration of one’s emotional reactions to future events (Wilson & Gilbert, 2003). Explanations for the occurrence of this bias include immune neglect, which is the failure to take into account valuable coping processes (one's psychological immune system) when dealing with future negative events (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998), and focalism, whereby people over-concentrate on the focal event, while failing to consider the consequences of other events that are likely to occur (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). It is possible therefore that, given the negative label associated with menopause, women feel they will be unable to cope with such a dread or fail to take into consideration the benefits of ageing and being menopausal. As they are approaching or entering the first menopausal stage, they may anticipate worse consequences and duration of the menopause than they actually are, and, as they reach the postmenopausal stage, their representation is likely to be adjusted positively. Delanoë (2001a)’s finding that older women had a more positive menopausal representation supports
this hypothesis. Chou and Schneider (2014) also found that premenopausal women tended to hold more negative menopausal representations than peri- or postmenopausal women. Whilst no longitudinal research could be found on the development of menopausal representation, other studies on attitudes towards the menopause have reached similar conclusions: younger, pre- or perimenopausal women tended to have more negative attitudes than postmenopausal women, indicating that women readjust their perception of the menopause as less troubling than anticipated earlier in life (Ayers, Forshaw, & Hunter, 2010; Wilbur, Miller, & Montgomery, 1995).

There is ample evidence that psychosocial factors and beliefs about the menopause modulate the experience of vasomotor symptoms (Avis et al., 1997; Collins, 2002; Hunter & Chilcot, 2013; Hunter & Mann, 2010). There is, however, limited research on what influences the representations of the menopause. Research on attitudes towards the menopause provides some clues, although the direction of the causality cannot be determined as most studies are cross-sectional. Nevertheless, attitudes towards the menopause have been found to be associated with age and attitudes towards ageing, mothers’ attitudes towards the menopause, knowledge about the menopause, social support, education, financial status, perceived health, life satisfaction and happiness, depressive thinking, body consciousness, including body shame and body surveillance (Ayers et al., 2010; Cate & Corbin, 1992; Nosek, Kennedy, Beyene, et al., 2010; Rubinstein & Foster, 2013; Strauss, 2011). To date, however, there is very limited information on how personality traits or cognitive factors may influence or correlate with menopausal representations or attitudes towards the menopause. Yet, there is evidence that, at least for illness or health threat, personality factors interact with representations, coping strategies and outcomes (Contrada & Coups, 2003; Leventhal et al., 1992). Nineteenth century physicians grossly exaggerated the link between the menopause and mental illness, but they did note that psychological endogenous factors impacted upon the expression of menopausal symptoms. Overall, this thesis proposes that some cognitive and emotional factors pertinent to the menopause experience can help us understand the formation of menopausal representations and, in turn, how those affect menopausal symptoms.
Conclusion

The concept of representations seems straightforward enough, but the process by which they are shaped is complex and multifaceted. In the absence of personal previous experience, women reaching the menopause have to rely on ‘lay’ knowledge acquired from other menopausal women and other sources of information, such as their medical practitioners and the media. But the menopause is not just a physiological transition, it is also a historical and cultural construct. This chapter has argued that the macro-narratives of the menopause over the past 150 years in Western societies (and perhaps longer) have shaped a negative stereotype of the menopausal woman, with various groups and individuals using the menopause to further their own social, medical and financial agendas (Houck, 2006). Against this narrative, feminist writers have presented an alternative discourse for the menopause as a normal transition that should be celebrated rather than dreaded. Women themselves also tend to represent their menopause as a natural stage of both physical and reproductive ageing, with positive and negative meanings, which fittingly, Mahadeen, Halabi and Callister (2008) describe as a ‘bittersweet paradox’ (p. 429). Like most transitions in life, the climacteric is characterised by losses and gains, and perhaps it is not surprising that most women represent their menopause as a neutral or positive event. As we move through the 21st century, a new focus on positive ageing may further contribute to more women welcoming rather than fearing their menopause. The importance of understanding women’s representations is not trivial, since beliefs held about the menopause are connected to the experience of this life stage. Yet, we know little about what influences those beliefs beyond the social and medical discourses described in this chapter. The study of cognitive and emotional factors that may impact upon the menopausal representations seems therefore relevant to better understand what is shaping women's experience of menopause. These factors are the focus of the next chapter.
CHAPTER 4
COGNITIVE AND EMOTIONAL FACTORS AFFECTING VMS

The stable woman of normal temperament, with an automatic and inherent power of self-control, might belong psychologically and physically to a different species, comparing her with one of the "nervous" "lymphatic" type. When will is habitually subservient to feeling and emotion; when energy has been diverted into morbid channels or dissipated in phantom introspection and excitation; when indolence and lethargy have tended to the constant survey of ills, real or fanciful, whether mental or physical; when the story of life has been that of a sensual and voluptuous living on the one hand, or written on the pages of its seamy side struggle, suffering, and endurance, on the other; when vitality is lowered and power of resistance lost, under any of these conditions how very differently does the woman approach the menopause and face the psychological crisis it involves.

(MacNaughton-Jones, 1913, p. 880)

Chapter overview

MacNaughton-Jones’s lyrical description above of the influence of a woman’s character upon her experience of the menopause may appear excessive, but the author makes a valid point in stressing the possible relationship between psychological factors and the menopausal experience. Certainly, there is ample evidence in the literature that cognitive and emotional factors, stable or transient, are likely to influence how vasomotor symptoms are perceived. It is the broad aim of this chapter to review this literature and highlight the role of menopausal representations (or beliefs) in mediating the relationship between cognitive and emotional factors and the experience of vasomotor symptoms. This review will form the basis for proposing a cognitive model of vasomotor symptoms that will serve to better understand the experience of flushes. The proposed model along with the research hypotheses will be presented in the following chapter.
This chapter starts with a brief description of several health social cognitive models, which are articulated around the perceptions of health threats and the self. Of particular interest to this thesis is Leventhal’s Self-Regulation Model of illness behaviour, which considers illness representations as pivotal in predicting how health threats are perceived and managed. This will be followed by the presentation of Hunter and colleagues’ cognitive model of menopausal of hot flushes and night sweats, a model that has greatly advanced our understanding of how psychological factors are linked to the experience of vasomotor symptoms. It will then provide a literature review of specific cognitive and emotional factors, based on thoughts and emotions that are often experienced in association with flushes.

**Menopausal representations influence the menopausal experience: Theoretical models and empirical evidence**

Traditional health models have tended to fall into two categories: the biomedical paradigm, which regards biological agents as sole causes of diseases, and the biopsychosocial paradigm, which considers the dynamic interaction of biological, social and psychological factors in determining the onset, progression and recovery from illnesses (Albery & Munafò, 2008). Within the biopsychosocial paradigm, several psychosocial models, also referred to as social cognition models, have focused on understanding how proximal cognitive and affective factors explain and predict illness behaviour, and help maximise effective management. Whilst those models do not deny the influence of more distal factors such as gender, socio-economic or socio-cultural status, they assume that those are less amenable to change than more proximal factors, such as beliefs and attitudes, and that the effects of those distal factors are largely mediated by the proximal factors included in the models (Armitage & Conner, 2000; Sutton, 2001).

Core proximal features of social cognition models have variably included motivation, intention to act, and perceptions regarding the self or the illness. For instance, the Theory of Planned Behaviour (TPB; Ajzen, 1991), which has become a major model in health promotion, considers intention as a construct central to the improvement of health, with intention depending upon individual attitudes towards engaging in health behaviour. Intention in the TPB is directly predicted by beliefs about others’ subjective norms, self-efficacy and control over external factors. The Health Belief Model (HBM), initially developed by Rosenstock (1966), places perceptions surrounding the illness and treatment cost-benefit, as well as motivation, at the core of preventative health action. Based on the two pivotal assumptions
that 1) people try to avoid illness or get better if ill, and 2) people believe that a specific health action will prevent, or cure, illness, the HBM incorporates six distinct constructs: perceived susceptibility to and perceived severity of illness, perceived benefits of action, perceived internal barriers to act, internal and external cues to action self-efficacy. Closely related to the HBM is a model based on Protection Motivation Theory (PMT; Rogers, 1975; Rogers, Cacioppo, & Petty, 1983), which posits that health behaviour is determined by protection motivation, which itself is a function of threat appraisals (perceived vulnerability and severity) and coping (response efficacy and perceived self-efficacy). In other words, the PMT posits that individuals make cost and benefit analyses that can predict the likelihood of change. Consistent with these models, perceptions, and specifically illness representations, are also at the core of Leventhal’s Self-Regulation Model of illness behaviour, another significant health model discussed in Chapter 3. The SRM is essentially a cognitively based model that includes three stages of regulatory health behaviour: an interpretation of the health threat based on representations of the illness, an action plan or coping strategy, and an appraisal stage of action/coping with re-evaluation of representations. A more detailed review is presented in the next section.

Fundamentally, social cognition models seek to better understand how individuals perceive their illness, are motivated (or not) to get better and take action to achieve this. While this seems simple enough, there are many factors that impact upon individuals’ perceptions, motivations and the processes involved in re-establishing good health. The difficulty for psychological health models is to capture this complexity, whilst remaining simple enough to be tested for a large range of health presentations. It is therefore not surprising that, while the models mentioned above have received good empirical support, they are also limited by the number of variables they can include. For instance, a meta-analysis on the effectiveness of the Theory of Planned Behaviour conducted by Webb and Sheeran (2006) showed that medium to large variations in intention translated into small to medium change in behaviour. While this demonstrates some effectiveness of the model, it also shows that intentions do not always lead to the individual taking actions, which may be due to the model not accounting for other variables that likely impact upon the model variables, such as fear, mood or past experiences. The HBM incorporates a number of salient cognitive factors that people use simultaneous to make health decision, but, similarly to the TPB, it fails to account for important factors, such as attitudes, beliefs, or other individual determinants that are known to guide health behaviour. Furthermore, in a recent meta-
analytic review of the HBM, Carpenter (2010) found that direct effects of perceived susceptibility and severity on health behaviour were weak, and suggested that mediation and moderation among the model variables should be examined in future research. Tested models based on the Protection Motivation Theory model were found to have a moderate mean effect size in a meta-analysis by Floyd and colleagues (2000) but, like the HBM, it does not account for other environmental, cognitive and/or dispositional factors that can impact on attitude change (Rogers, 1975).

Whereas most models have not integrated concepts from the stress-coping theory, a strength of the SRM is that it explicitly pays attention to the role of coping. However, despite this attention, most research has focused on the illness representation dimensions at the expense of considering the role played by coping (de Ridder & de Wit, 2006). There is strong support in the literature for the five distinct dimensions of the SRM (Cause, Identity, Timeline, Consequences, and Control/cure, as presented in Chapter 3), and the model has shown to be useful in predicting compliance behaviour (Hagger & Orbell, 2003). Recent research, however, has shown that the independent affective and cognitive dual processing suggested by Leventhal is unlikely, and that, rather, mental representations are more likely to be shaped by an interaction of both processing modes (Petersen, van den Berg, Janssens, & van den Bergh, 2011). Moreover, the model posits that individuals conduct a dynamic re-evaluation at each stage of the models, but research suggests that individuals use a more rigid approach and adopt one single strategy, for instance avoidance (Berry, 2004).

Nevertheless, the SRM is particularly relevant to the experience of the menopause for several reasons. It has been tested for a wide range of health threats (Hagger & Orbell, 2003), but has the flexibility to be adapted to conditions that are not illnesses, for instance IVF treatment (Lord & Robertson, 2005) or pregnancy (Jessop, Craig, & Ayers, 2014), and has provided an adequate framework for understanding women’s menopausal experience (Chou & Schneider, 2012). The SRM places representations at the core of the model, and the influence of menopausal beliefs on the experience of vasomotor symptoms has been well documented (Chedraui et al., 2010; Duffy, Iversen, Aucott, & Hannaford, 2013; Hunter & Chilcot, 2013; Matthews, 1992; Reynolds, 2000). Indeed, Hunter and Mann (2010) partly drew from self-regulation theory and the SRM in a cognitive model proposing to explain symptom perception, cognitive appraisal, and behavioural reactions to vasomotor symptoms. Coping in other health models, such as the HBM and the TPB, tends to focus on self-efficacy and perceived control, whereas the SRM
does not prescribe coping strategies, but rather considers all types of coping as relevant (Leventhal et al., 1997). As described in Chapter 2, women use a wide range of strategies to address their hot flushes, from seeking medication to ignoring symptoms altogether and “soldiering on”, and a model that considers the broad sense of coping is well suited to the study of the menopause. Furthermore, a key construct of the SRM is the idea that lay beliefs about health threat and representations are integrated within existing schemata, enabling individuals to create their own common sense model. Despite the menopause being only experienced once in a lifetime, women hold menopausal schemata well before they reach the menopause (Hunter & O'Dea, 2001), thus the model is applicable to this transition in life.

Self-regulation models are construed as “dynamic motivational system[s] of setting goals, developing and enacting strategies to achieve those goals, appraising progress, and revising goals and strategies accordingly” (de Ridder & de Wit, 2006, p. 3). Although, as noted earlier, it is uncertain whether individuals routinely undertake revision processes, self-regulation models essentially assume that individuals are motivated to re-establish their state of normality. While the significance of symptoms for menopausal women is uncertain (Woods & Mitchell, 2005), many women whose quality of life is compromised by vasomotor symptoms seek to get better (Keenan et al., 2003; Williams et al., 2007; Williams, Levine, Kalilani, Lewis, & Clark, 2009), often without medical assistance (Worsley, Bell, Gartoulla, & Davis, 2016). Another common characteristic of self-regulation is the attention it pays to the management of emotional responses, which impact upon motivation, and are complexly linked with cognitive processes (de Ridder & de Wit, 2006). Whether or not cognitive and emotional processing occurs in parallel or in an interactive fashion as described earlier, the fact that the SRM considers the emotional content of representations is also useful when the model is applied to the menopause because women often express strong emotional reactions associated with their menopausal symptoms (Reynolds, 1997b, 1999a). For all the aforementioned reasons, the SRM was selected as an appropriate model for this research; a detailed description is provided next.

**Leventhal’s Self-Regulation Model of illness behaviour**

The SRM (see Figure 2) predicts that people hold automatic parallel cognitive and emotional representations about specific illnesses, elaborated through schematic (concrete or
perceptual memory) and conceptual (abstract or propositional memory) processes (Hagger & Orbell, 2003). As described in Chapter 3, those representations form a complex interactive system that is triggered when a person is confronted with an illness. When they get sick, individuals primarily try to make sense of their illness by piecing together information they hold from their previous experience or abstract knowledge of the illness, and from this, form a mental representation that is activated along with emotional reactions, such as worry or fear. Illness cognitions are likely to act as a filter and interpretive schema for the available sources of information about a health threat. An important premise of the model is that illness representations will guide the strategies used by the individual to manage the illness and, in turn, those strategies will predict the illness outcomes (e.g., disease state, physical, social and psychological function, well-being and quality of life, vitality, and so forth). The model also assumes that people constantly re-appraise the efficacy of their coping strategies and subsequent outcomes, and revise their illness representations and management plan accordingly.

Figure 2. Schematic representation of Leventhal et al.’s Self-Regulation Model of Illness, from Hagger and Orbell (2003) – Copyrights obtained

The cognitive representation of Leventhal’s original model encompassed four dimensions, *identity, timeline, consequences* and *cause* (Leventhal et al., 1980), to which a fifth one, *control/cure* was added later on (Lau et al., 1989; Lau & Hartman, 1983). A meta-component of illness *coherence* was further proposed by Moss-Morris and colleagues (2002). During the
development of the Menopause Representations Questionnaire (MRQ), Hunter and O’Dea (2001) found that women were confused about answering causal questions regarding the menopause or found it irrelevant, thus the authors removed the cause dimension from the final MRQ. Similarly to the cause dimension, illness coherence relates to how individuals understand their illness with questions such as “My illness is a mystery to me” or “My illness does not make sense to me” (items from the Revised Illness Representation Questionnaire, Moss-Morris et al., 2002). Whilst coherence is relevant to most illnesses, it is likely to be confusing for menopausal women who would overwhelmingly know that the menopause marks the end of the reproductive stage. Therefore, for the purpose of this research, the dimensions of cause and coherence will not be considered. The four dimensions of interest to this thesis can be described as below:

- **Identity**: this dimension refers to the symptoms (or labels), which people assign to their illness through a process of matching to a pre-existing illness “prototype”. For the menopause, identity may include typical menopausal symptoms, such as hot flushes, decreased sexual interest or irregular periods, or more atypical symptoms, for instance memory loss, bloating, or headaches. When they become symptomatic, people automatically undertake a prototype check that helps them define their illness. The greater the fit between symptoms experienced and the prototype, the greater the confidence in the correct labelling of the illness. This process, however, may lead to symptoms wrongly attributed to the illness and on the other hand, may increase hypervigilance to symptoms that the individual believes are part of the illness prototype.

- **Timeline**: timeline refers to the expected duration of the illness, and can divided into three main categories: acute, chronic and cyclic. The timeline for the menopause may be the perception as to whether the menopause will last for a long or short time.

- **Consequences**: the dimension of consequences, which can be real or imagined, includes both the evaluation of the seriousness of the illness and the impact of the illness on functioning (physical, social, financial, and so on). When referring to the menopause, the consequence dimension may include feeling free from experiencing menses, starting a new life phase, or how the menopause may affect one’s confidence.

- **Control/cure**: depending on whether the illness is acute or chronic, control/cure refers to how well the illness can be cured or managed, and, as such, highly predicts the choice of actions to address the illness. This dimension can be further divided into
personal controllability and medication/treatment controllability (Benyamini, 2011; Hagger & Orbell, 2003). In the context of the menopause, control/cure may encompass perceived ability to cope with the menopause, self-efficacy to deal with symptoms or any changes brought on by the menopause.

A meta-analytic review of 45 mostly prospective studies using the SRM conducted by Hagger and Orbell (2003) demonstrated good construct and discriminant validity for the SRM dimensions and supported the model’s major premise that individuals form a ‘mental representation’ or schema for their illnesses. Furthermore, the authors confirmed conclusions of previous research (see Heijmans, 1998; Scharloo et al., 1998) that combining illness beliefs into clusters may be useful in predicting coping strategies and health outcomes. In particular, the meta-analysis results showed that individuals who tend to identify more symptoms and more serious consequences also tend to use emotional coping and avoidance or denial. On the other hand, those who perceived having more control over their illness used more active coping strategies, such as problem-focused coping, cognitive reappraisals, and/or seeking social support. A similar pattern of relationships occurred between dimensions and illness outcomes: serious consequences, chronic timeline and strong identity were positively associated with low adaptive illness outcomes, such as psychological well-being, role, physical\footnote{Timeline and physical functioning did not show a significant relationship in Hagger and Orbell’s review.} and social functioning, and vitality, as well as high maladaptive outcomes, such as psychological distress. Conversely, high illness perceived control strongly and positively correlated with psychological well-being, role functioning and vitality, and was negatively associated with psychological distress and disease state.

Hagger and Orbell (2003) did not report the relationships between coping strategies and outcomes, but Dempster, Howell and McCorry (2015), who also conducted a meta-analysis of SRM studies with a focus on examining the role of coping in the relationship between illness perceptions and psychological health outcomes, found that behavioural disengagement, venting emotions and denial had the strongest relationship with psychological distress. Other research have also indicated that avoidant and passive coping is associated with higher levels of impairment in physical and social functioning, mental health and vitality, while the use of task-focused strategies is related to better mental and physical health related outcomes (Chou & Schneider, 2012; Heijmans, 1998; Rutter & Rutter, 2007; Scharloo et al.,
Together, these findings support the general premise of Leventhal’s model that healthy cognitive and emotional representations are associated with positive coping, which are related to positive illness outcomes, and that the opposite is true for unhealthy representations.

**The role of coping as a mediator of illness outcomes**

The SRM is a mediation model in which coping mediates the relationship between illness cognitions and illness outcomes (Leventhal et al., 1997). Coping is defined by Folkman and Lazarus (1984) as “the constantly changing cognitive and behavioural efforts to manage the specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Leventhal and colleagues (1997) viewed coping as procedures used to eliminate or control potential or ongoing illness threats, and posited that illness representations guided the selection of procedures. As such, procedures likely have features that resemble illness representations, that is, they have similar representational contents to illnesses: procedures have a timeline for effectiveness, an identity as they respond to specific symptoms, consequences measured in terms of efficacy, and have a cause, the application of therapy to the source of distress. Clearly, as part of self-regulatory process, the relationship between illness representations and coping representations is bidirectional: “The selection and performance of coping procedures is shaped by the representation of the problem, and the problem representation, in turn, is shaped by the performance and appraisal of coping procedures” (Leventhal, Leventhal, & Contrada, 1998, p. 722). It is, however, the appraisal of the outcomes that generates the appraisal of coping (Hagger & Orbell, 2003), thus the outcomes of an illness has a direct impact upon the selection of ongoing coping procedures.

While there is consensus in the literature that positive illness cognitions predict positive coping and outcomes, support for the role of coping as a mediator of illness outcome is less clear (Dempster et al., 2015; Hagger & Orbell, 2003). Some cross-sectional studies have found partial or full mediation effects for coping (Evans & Norman, 2009; Gray & Rutter, 2007; Knibb & Horton, 2008; Rutter & Rutter, 2002), but many have not (Dorrian, Dempster, & Adair, 2009; Edgar & Skinner, 2003; Heijmans, 1998; Kemp et al., 1999; Scharloo et al., 1998). In other studies, the mediation hypothesis was only partially supported, i.e. it was supported for some dimensions of illness representations or some coping strategies but not others (Carlisle, John, Fife-Schaw, & Lloyd, 2005; Fortune, Smith, & Garvey, 2005; Gould, Brown, & Bramwell, 2010). Longitudinal studies have also failed to support the mediation hypothesis of coping (Dempster et al., 2015; Evans & Norman, 2009;
Moreover, there is disagreement about the proportion of the variance explained by coping in illness outcomes. Some studies have found that the effects of illness representations on illness outcomes are stronger than the effects of coping on illness outcomes (Dempster et al., 2012; Dorrian et al., 2009; Hagger & Orbell, 2003; Heijmans, 1999; Kaptein et al., 2006), whereas others have found that coping is often the strongest predictor (Dempster et al., 2015).

Whilst coping is an important component of health self-regulation, its role as a mediator between illness cognitions and outcomes remains unclear. Several explanations for the weak mediation findings have been suggested by Hagger and Orbell (Hagger & Orbell, 2003). First, they proposed that, in general, the assessment of coping across studies lack specificity and fails to consider important personal characteristics. To counter the first limitation, they recommended the use of objective, problem-focused behavioural coping measures, such as diabetes management techniques and drug regimen adherence; others have also since recommended using situation-specific measures in SRM studies (Hale, Treharne, & Kitas, 2007; Leventhal, Weinman, Leventhal, & Phillips, 2008). This study will address the common shortcoming of using general coping strategies by using VMS specific behavioural coping measures. Incorporating cognitive trait measures into the model would help address the second limitation. This, however, is seldom done. Furthermore, Hagger and Orbell suggested that the feedback effects of outcomes on representations may have a confounding effect. Certainly, the constant process of appraisal and re-appraisal, which is integral to a dynamic self-regulatory model, makes it difficult to determine the order of mediation pathways at any given time. This suggests that mediation effects could be found in pathways that include coping as a mediator or illness appraisal as a mediator. To date, no study has compared the two models for best fit.

The SRM applied to the menopause

Only one study has examined the applicability of the SRM to the menopause (Chou & Schneider, 2012). In this questionnaire-based cross-sectional study of 228 mostly postmenopausal (76.8%) women aged between 45 and 64 years-old, the authors investigated the relationships between menopause representations, exercise and general task, emotion and avoidance coping, as measured by the Coping Inventory for Stressful Situations (CISS, Endler & Parker, 1990), as well as two outcomes measures, physical and mental health, surveyed with
the Rand SF-36 Health Survey (Hays, Sherbourne, & Mazel, 1993). Both emotional and cognitive representations were considered, with the later comprising eight subdimensions (cause, symptoms, timeline chronic, timeline cyclic, personal control, treatment control, personal consequence and coherence).

Path analysis was used to analyse the relationships of a proposed model whereas menopause representations influence coping strategies, which in turn influence outcomes. Pathways were removed to obtain acceptable fit indices for the model, i.e., $\chi^2$ (46, $n = 225$) = 99.69, goodness of fit = 0.96, CFI = 0.95, RMSEA = 0.07 (90% CI, 0.05-0.09), and AIC = 247.69, and the authors concluded there was good evidence for the mediation model menopausal representations-coping-outcomes. In particular, they found that emotional representations predicted the use of more emotion-oriented coping and less task-oriented coping; personal control positively predicted task-oriented coping and longer timeline negatively predicted emotional-oriented coping. Higher use of exercising and task-orienting coping predicted better mental and physical health, and, conversely, higher use of emotion-orienting coping predicted worse mental and physical health. Avoidance-coping was not predicted by any dimensions of the menopause representation, and while it appears to predict mental health on the published model figure, the regression weight was not provided. Incidentally, avoidance-coping was found to correlate weakly with coherence, but was not significantly associated with any of the other dimensions.

There are, however, several limitations to this research. The authors used general scales for all variables, including coping strategies and menopausal representations, for which they used the Illness Representation Questionnaire with the terms “menopause” or “menopausal symptoms” substituted for the word “illness”. Although word substitution is a common practice in SRM testing, and the authors conducted a Confirmatory Factor Analysis (CFA) to validate their questionnaire (see also Chou & Schneider, 2014), the use of a published menopause specific representation questionnaire (e.g. the MRQ published by Hunter & O'Dea, 2001) may have been more appropriate. The outcome measures (i.e., Rand SF-36) were also general, rather than menopause specific. The STRAW criteria for reproductive ageing, the gold standard in menopausal research, were not used, although similar criteria were applied.
Hunter and colleagues’ cognitive models of menopausal hot flushes and night sweats

Despite two decades of research into the cognitive and/or emotional antecedents and consequences of the menopause, few comprehensive models of hot flushes have been suggested. Hunter and colleagues have so far provided the most inclusive explanation for understanding the complex experience of vasomotor symptoms. Hunter and Rendall (2007) proposed a cognitive-behavioural model of flushes drawing on symptom perception, self-regulation and cognitive behavioural theories. In this model, the experience of HF/NS is affected by bodily and physical changes, stress and lifestyle triggers, mood and emotional reactions, behavioural strategies, and thoughts/beliefs. Hunter and Mann (2010) revisited these factors and proposed a four-tier model (see Figure 3) comprising (from the top down) the information input (biological processes, triggers and lowering of hot flushes threshold), detection and attribution (frequency of HF/NS predicted by somatisation and selective attention), cognitive appraisal (severity, distress and interference of HF/NS predicted by beliefs about the menopause and HF/NS) and behavioural coping strategies.

This model was partly tested by Hunter and Chilcot (2013) in a sample of 140 peri- and postmenopausal women experiencing problematic vasomotor symptoms. Participants were recruited from medical practices, a menopause website and local newspaper advertisements. The study tested whether somatic amplification, optimism, stress, depressed mood and anxiety would have a direct effect on flush frequency and problem-rating, or if there was a mediation effect of the relationships via hot flush beliefs. For this, the authors used both objective (ambulatory sternal skin conductance) and subjective (frequency and problem rating) measures of vasomotor symptoms. Flush beliefs were measured with the Hot Flush Beliefs Scale, a 27-item comprising three subscales: beliefs about HF in social context, beliefs about coping/control and beliefs about night sweats and sleep (Rendall et al., 2008). Cognitive factors were measured using the mood and anxiety/fears subscales of the Women’s Health Questionnaire, a scale developed by Hunter (1992) to specifically assess emotional and physical well-being in middle-age women. The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), the Somatic Amplification Scale (Barsky, Wyshak, & Klerman, 1990) and the Revised Life Orientation Test LOT-R (Scheier, Carver, & Bridges, 1994) were also used to measure respectively perceived stress, somatisation amplification and dispositional optimism.
First, the authors found that none of the predictors influenced physiologically measured hot flushes, but somatic amplification and optimism predicted self-reported frequency. Unfortunately, the authors did not test the mediation pathway between cognitive factors, menopausal beliefs and self-reported frequency. Second, structural equation modelling revealed that beliefs about hot flushes were the strongest predictor of HFNS problem rating. The mediation hypothesis was partly supported in that somatic amplification, stress and anxiety influenced problem rating through flushes beliefs, but optimism and depressed mood did not. Hunter and Chilcot (2013) noted several pertinent points. First, they highlighted that frequency, either self-reported or physiologically measured, problem-rating and interference are likely to measure different aspects of flushes, and are influenced differentially by cognitive factors: psychological factors mostly impact upon the bothersomeness of vasomotor symptoms, and act at a symptom perception and cognitive appraisal level, rather than impacting on flushes at the physiological level. The effect of stress on problem rating is mediated by beliefs about hot flushes, suggesting influence at the level of cognitive appraisal. The finding that depressed mood was not mediated by beliefs when optimism (a correlated measure) and anxiety were, is surprising. The Women’s Health Questionnaire Depressed Mood Scale was used to measure this variable, and is a well-validated scale for mid-life women (Hunter, 1992, 2003b). It contains six items tapping into dysphoria, irritability, anhedonia, appetite and suicidal ideations, but it does not measure
other important cognitive aspects of depression, such as low self-esteem and worthlessness (Heimdal, Dørtemen, Arfwedson Wang, & Grimsgaard, 2010), and perhaps those are essential constructs involved in shaping VMS beliefs. Interestingly, a review of CBT for HFNS treatment effects conducted by Norton, Chilcot and Hunter (2014) concluded that changing cognitions about sleep and coping/control mediated the effect of CBT on HFNS problem rating but, surprisingly, improvements in depressive mood did not.

Hunter and Chilcot’s new model greatly advances our understanding of the mediation process of beliefs in the experience of vasomotor symptoms. While the SRM focuses on the mediation role of coping in the relationship between representations and outcomes, Hunter and Chilcot have focused on teasing out which aspects of the VMS experience (subjective versus objective measures, frequency versus problem-rating) are influenced by cognitions. The model, however, does not advance our understanding of coping, as behavioural measures were not included. In the first model proposed by Hunter and Rendall (2007), the authors highlighted a bidirectional link between VMS experience and behavioural coping. The revised model by Hunter and Mann (2010) hypothesised that VMS frequency would predict VMS problem-rating, which in turn would predict behavioural reactions and help seeking. The authors proposed a feedback link between the behaviour elicited and menopausal beliefs, as well as other cognitions and mood, but there is no link in the model to suggest the impact of coping strategies upon VMS experience, which is a central tenet of the SRM and other models of health behaviour. They do, nonetheless, note that behavioural strategies are likely to impact at all stages of the model and, although help seeking may only be weakly related to frequency of flushes, it is likely to influence severity and problem rating significantly.

Research on the cognitive experience of vasomotor symptoms is still in its infancy. The SRM provides a good framework for understanding how cognitions may influence the experience of hot flushes, and Hunter and colleagues’ cognitive model further advance our knowledge on the topic. While the consecutive research published by Hunter and her colleagues (Hunter & Chilcot, 2013; Hunter & Mann, 2010; Hunter & Rendall, 2007) included psychological variables pertinent to the experience of the menopause, those remained limited. Furthermore, the influence of trait and state factors upon the formation of illness representations has received little attention in the literature. Yet, understanding how those factors can affect menopausal representations at a personal level, is essential to further our understanding of the vasomotor experience. This will be the focus of the following section.
Traits and states influence representations

Representations are cognitively useful because they provide a meaningful known symptom pattern into which new perceived symptoms can be assimilated (Moss & DiCaccavo, 2005). However, the framework of the SRM makes few assumptions about the impact of internal and external factors on representations. Yet, several factors are involved in the dynamic process of forming health threat representation, such as focus of attention, selective monitoring of sensations, cognitive load, mood and personality traits (Moss & DiCaccavo, 2005; Watson & Pennebaker, 1989; Williams & Lees-Haley, 1993). Given the subjective interpretative process used when making representations, it is surprising that little has been written about how representations are formed, and in particular, how individuals’ traits and states may influence their formation (Benyamini, 2011).

Based on the transactional perspective that personality dimensions influence cognitive appraisal and coping strategies (Lazarus & Folkman, 1987), Contrada and Coup (2003) proposed several mediation and moderation pathways by which traits may influence illness outcome. One of those meditational pathways underlines the influence of personality upon the formation of mental representations, which in turn affect illness outcome. Using Lazarus and Folkman (1987)’s model, Jacobucci (2000) also found some support for this in highlighting differential correlations between primary appraisals of threats and challenges and the Five Factor Model inventory (McCrae & Costa, 1987), demonstrating that primary appraisal is a function of personality and may be stable over time.

Thus far, the studies that have tested how personality influence illness representations have focused on two closely related concepts, neuroticism and type D personality. Neuroticism is a broad personality dimension characterised by a tendency to experience negative distressing emotions, with corresponding behaviour and cognitive traits (Costa & McCrae, 1987), while type D personality is a tendency to display both negative affect (a general dimension of personal distress) and social inhibition (Denollet, 2005). Findings were consistent across studies: individuals with a type D personality or high on neuroticism tend to identify more symptoms, believe their illness will have more serious consequences, will last longer and will be less controllable by them or through treatment; they also tend to experience significantly more emotions linked to their illness (Feldman, Cohen, Doyle, Skoner, & Gwaltney, 1999; Goetzmann et al., 2005; Mols, Denollet, Kaptein, Reemst, & Thong, 2012; Williams, O’Connor, Grubb, &
In menopausal research, postmenopausal women successfully treated for moderate to severe vasomotor symptoms were found to have higher neuroticism when compared with a control group of asymptomatic women (Nedstrand, Wijma, Lindgren, & Hammar, 1998). To date, only one study has tested if illness representations mediated the effect of personality and coping (Lawson, Bundy, Belcher, & Harvey, 2010). In this two-year longitudinal study of 138 diabetic patients, the authors used the Five Factor Model personality dimensions (McCrae & Costa, 1987) and found support for perfect or partial mediations in most of the models tested. In particular, they reported that personal control fully mediated the relationship between openness and active coping or emotional support seeking, and that the association of agreeableness with gaining social support was also mediated by treatment control beliefs.

Similarly, the impact of more transient factors, such as emotions, mood or stress, on the formation of beliefs has received very little attention (Fiedler & Bless, 2000). Frijda, Manstead and Bem (2000) noted that “[…] emotions can awaken, intrude into and shape beliefs, by creating them, by amplifying or altering them, and by making them resistant to change”. Emotions, however, are fast chemical responses to specific triggers, whereas moods tend to be less intense than emotions, and often lack a contextual stimulus. Nonetheless, it is likely that both operate in a similar fashion. Adapting from Piaget’s distinction between assimilative and accommodative processing styles, Fiedler and Bess (2000) conceptualised how beliefs are particularly sensitive to affective influences. Their model suggests that positive moods have assimilative power, i.e., that they encourage top-down processing and greater reliance upon well-established knowledge structures, such as schemas, stereotypes and behavioural scripts. On the other hand, negative moods recruit accommodative, bottom-up processing, and a more conservative cognitive style in which details about the external world and new stimulus information are more carefully considered, and belief systems updated. It is thus expected that negative moods are more likely to impact on existing beliefs than positive ones.

The assertion that negative mood enhances negative beliefs has received good support. Several studies partly focusing on the impact of mood on illness representations found that depressive mood was correlated with negative illness beliefs, although, as with all correlation studies, the direction of the relationships cannot be assumed (Bradley, 1994; Hampson, Glasgow, & Foster, 1995; Murphy, Dickens, Creed, & Bernstein, 1999; Paschalides et al., 2004).
Specifically, depressed individuals believed they had less control over their illness and that it had more serious consequences compared to non-depressed individuals (Murphy et al., 1999; Paschalides et al., 2004). Findings on timeline and symptom reporting were mixed, though negative affect has been consistently been linked to physical complaint scores (Salovey & Birnbaum, 1989; Watson & Pennebaker, 1989). Conversely, and as noted earlier, Hunter and Chilcot (2013) did not find an effect of depressive mood on VMS beliefs, although there was an effect for anxious moods. Given that Hunter and Chilcot noted that their sample had elevated depressed mood compared to age matched norms, this result is particularly surprising, and at odds with previous findings published by Miranda and Persons (1988). In a couple of studies testing if dysfunctional beliefs depended on current mood states for depressed and asymptomatic individuals, Miranda and Persons found that dysfunctional beliefs were more likely when mood was worst for those experiencing a depressive episode, but that this was not the case for asymptomatic participants. Clearly, the impact of negative mood on menopausal beliefs needs further investigation.

**Cognitive and emotional factors that may influence menopausal representations**

**Thoughts and emotions linked to vasomotor symptoms**

Perhaps the best way to understand the link between mood and cognitions in the context of hot flushes is to highlight the specific patterns of thoughts and emotions that women recurrently report before, during or after experiencing distressing HF/NS. A review of qualitative and quantitative research reveals that thoughts and emotions can be classified into four main categories: (1) catastrophising about HF/NS and their consequences (Reynolds, 2000), (2) negative thoughts, helplessness and loss of control (Carpenter, Wu, Burns, & Yu, 2012; Hunter & Liao, 1995; Pimenta, Leal, Maroco, & Ramos, 2011a; Reynolds, 1997b), (3) shame and embarrassment (Hunter, Coventry, Hamed, et al., 2009; Nosek, Kennedy, & Gudmundsdottir, 2010), and (4) lack of perceived control/coping skills (Hunter, Coventry, Mendes, et al., 2009) (a more detailed account is provided in the literature review in the next section). Moreover, distressing HF/NS are frequently linked with thoughts and feelings that resemble symptoms of anxiety: panic feelings, sense of being trapped or enclosed, fear or passing out or dying and feelings of
suffocation (Reynolds, 1999a). Irritation, loss of concentration, making mistakes, feeling stressed or tense, or negative association to the body state (being old, ill or drab) are also commonly associated with the bothersomeness of HF/NS (Reynolds, 1997b). Paying attention to bodily sensations and/or highly negative interpretation of physical sensations, a hallmark of anxiety states, tends to predict more frequent and distressing flushes (Hunter & Mann, 2010), and, unsurprisingly, somatic anxiety has been found to have a strong predictive temporal association with the risk of experiencing flushes (Freeman & Sammel, 2016).

This study proposes that five specific dispositional factors can be linked to the categories of thoughts and emotions highlighted in the literature: anxiety sensitivity, catastrophic thinking, depressive symptoms, mastery/control beliefs and body consciousness. These links are presented in Figure 4, and the terms defined below:

- **Anxiety sensitivity (AS)** refers to the fear of anxiety-related physical sensations and the belief that these sensations have harmful consequences (Reiss & McNally, 1985). It incorporates the concept of hyper-vigilance to biological challenges, and can be understood as a dispositional characteristic that can predict anxiety disorders, in particular panic disorders.

- **Catastrophic thinking** is a maladaptive thinking style broadly conceived as an exaggerated negative “mental set” involving anticipations about the future and ruminating about worst outcomes and one’s powerlessness to control the situation (Reynolds, 2000).

- **Depressive symptoms** can be defined as clusters of mood (e.g., sad, empty, or irritable), cognitive (e.g. negatively oriented thoughts about the self, future and personal world), and behavioural (e.g., lack of appetite, movement retardation) symptoms.

- **Control beliefs** is a person’s beliefs in his or her ability to exert control and the degree to which people view events as within their control (Rapee, Craske, Brown, & Barlow, 1996), and can be construed as a dispositional characteristic (Rapee et al., 1996).

- **Body consciousness**: The Objectified Body Consciousness (OBC) theory, which outlines the principle of self-objectification, provides a good framework to examine the concepts of shame and embarrassment that frequently accompany flushes in social context, because it incorporates two important themes of cognitive menopausal studies: body self-surveillance and body shame. Body consciousness, or body self-
objectification, is defined as viewing one’s body from a third-person perspective and having negative beliefs about body self-surveillance and body shame (Hyde, Mezulis, & Abramson, 2008).

<table>
<thead>
<tr>
<th>Thoughts/emotions associated with VMS</th>
<th>Corresponding cognitive and emotional factors</th>
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<tbody>
<tr>
<td>Hypervigilance to somatic symptoms</td>
<td>Anxiety sensitivity</td>
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<tr>
<td>Negative, catastrophic thoughts about self and consequences of VMS (irritation, panic, suffocation)</td>
<td>Catastrophic thinking</td>
</tr>
<tr>
<td>Helplessness, negative thinking (frustration, despair)</td>
<td>Depressive thinking, mood and behaviour</td>
</tr>
<tr>
<td>Lack of self-efficacy/coping skills, thoughts of losing control</td>
<td>Mastery/control beliefs</td>
</tr>
<tr>
<td>Embarrassment or social anxiety linked to appearance and unattractiveness</td>
<td>Body consciousness/shame</td>
</tr>
</tbody>
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Figure 4. Proposed links between cognitions and emotions associated with the experience of vasomotor symptoms and cognitive and emotional factors.

Perceived stress, although not a cognitive or emotional factor per se, also needs to be considered as a possible predictor of menopausal representations because of its well-evidenced association with vasomotor symptoms and cognitive vulnerabilities (Gold et al., 2004; Hammen, 2005; Hunter & Chilcot, 2013; Kuh, Wadsworth, & Hardy, 1997; Miranda & Gross, 1997; Shostak & Peterson, 1990).

There are additional cognitive factors that could be considered as influencing beliefs, but they offer less validity in the context of the experience of VMS. For instance, the looming cognitive style - a tendency to construct negative mental scenarios and appraisals of unfolding threat and increasing danger (Riskind, Williams, & Joiner Jr, 2006) - relates more to situations with possible escalating risks, and therefore has less application to HF/NS. A tendency to ruminate about negative events or emotions is another vulnerability linked to both depressive and anxiety disorders. Certainly, rumination is a significant process involved in catastrophising, depressive thinking, self-evaluation and body shame, but it has not been highlighted in the literature as a standalone contributor to frequency or distress during flushes and will therefore not be considered.
The following section presents a review of the five factors described above (i.e., anxiety sensitivity, catastrophic thinking, depressive symptoms, control beliefs, body consciousness and self-objectification), which were selected for inclusion in this study, with a focus on their possible influence on representations. The section starts with attentional and interpretative biases and a brief review of the symptom perception hypothesis, which highlights the relationship between mood and symptom perception and reporting. Perceived stress is also reviewed at the end of this section.

Cognitive and mood factors linked to VMS: A review of the literature

**Attentional and interpretative biases**

The second tier of Hunter and colleagues’ cognitive model (Hunter & Mann, 2010) posits that hyper-vigilance to bodily symptoms may be linked to frequency of HF/NS, and this has been confirmed at least for self-reported frequency (Hunter & Chilcot, 2013). This assumption is based on the symptom perception hypothesis, which proposes a link between negative affect (NA) and increased perception and report of somatic complaints (Costa & McCrae, 1987; Watson & Pennebaker, 1989). Trait NA is considered to represent a broad spectrum of different negative trait affects, such as anxiety, depression, and anger, and is characterised by pervasive negative mood, views and self-concept, with experiences of high distress and dissatisfaction across time and situations (Howren, Suls, & Martin, 2009; Pennebaker, 1999). It is essentially identical to neuroticism, trait anxiety and pessimism (Pennebaker, 1999). Individuals high on NA have hyper-vigilant and sensitive attentional system (Rachman, 2004), and apply cognitive biases to threat-related environmental stimuli, as well as to their own physiological activity, behaviour and cognitions (Eysenck, 1997). An early hypothesis suggested that perception of symptoms is biased at both encoding and recall of information for those scoring high on NA (Larsen, 1992), but recent studies show that the process may be more complex. In particular, depressive mood and cognitions may play a critical role in physical symptom reporting, and may, in fact, play a more substantial role in the recall bias than other facets of NA (Howren et al., 2009).

In their revision of the symptom perception hypothesis, Howren and Suls (2011) investigated the distinct roles of anxiety and depression in the experience of physical symptoms. Three mixed-design studies using samples of psychology undergraduate students were used for this purpose. Study 1 \((N = 144)\) consisted in asking participants to complete
questionnaires including the Beck Depression Inventory, the NEO Personality Inventory and a symptom checklist. In Study 2 (N = 125), participants were randomly assigned to five mood conditions (anxious, depressed, angry, happy, or neutral) induced by self-generated images, and subsequently asked to report on their mood, using the Profile of Mood States Short Form, and identify physical symptoms experienced over the previous three weeks from a physical symptom checklist developed by Larsen and Kasimatis (Larsen & Kasimatis, 1991). Study 3 (N = 120) involved a repeated-measures design in which only anxious, depressed and neutral moods were experimentally induced, but participants reported about both concurrent and retrospective physical symptoms. The authors found that depressive affect was related to retrospective inflated symptoms reporting, while anxious affect was associated with concurrent or transient inflated symptoms reports. They also found that depression and anxiety have additive, rather than interactive, effects on symptom reporting, i.e. some people may experience both high levels of momentary somatic symptoms and recall many symptoms retrospectively. This suggests two distinct cognitive processes regarding the perception and reporting of somatic symptoms: one precipitated by transient anxious arousal, the other perpetuated by negative rumination. While the symptom perception hypothesis tends to focus on frequency of symptoms, pain research has revealed that vigilance to pain is associated with heightened pain severity (Goubert, Crombez, & Van Damme, 2004). Attentional bias has also been linked to increased physical sensations, such as an itch (van Laarhoven, Kraaimaat, Wilder-Smith, & Evers, 2010) and, similarly, menopause studies have found that somatic amplification affects the severity of vasomotor symptoms, mediated by HFNS beliefs (Hunter & Chilcot, 2013; Hunter & Haqqani, 2011).

Personal variables other than affect have been linked to hypervigilance to symptoms. Of interest to this discussion, gender and age have been found to influence the manner in which symptoms are both perceived and reported. In a review of psychological factors influencing physical symptom reporting, Pennebaker (1999) pointed out that males and females rely on different sources of information to interpret bodily states, with men tending to focus on internal physiological cues, and women being more sensitive to external environments. The integration of external sources for women may partly explain why they are particularly distressed when experiencing hot flushes in the workplace and other social situations (Reynolds, 1999a). Negative affect may also influence differentially the type of symptoms men and women report: men high on NA tend to report more common symptoms, like blocked nose, sore throat, ringing ears, flu-like feelings and sore eyes, while women high on NA tend to report symptoms considered more
severe, such as dyspnoea, irregular heartbeat, feelings of suffocation and chest pain (van Diest et al., 2005). In relation to age, older adults tend to be calmer than younger adults when responding to either affective, cognitive or physiological anxiety provocations, except when physical health is threatened (Teachman & Gordon, 2009). It is possible that aging-related cognitions enhance attentional bias to bodily states among older adults as they tend to attribute physical symptoms to old age (Leventhal & Crouch, 1997). Poon and Knight (2009) investigated how mood and old age schema influence older adults’ attention to physical symptoms by manipulating mood and ageing schema conditions in a sample of 76 community-dwelling older adults aged 60 and over. They found that individually, neither sad mood nor old age schema induced an attentional bias towards symptoms, but this bias occurred in the presence of both sad mood and old age schema. It is not the focus of this research to analyse whether an interaction effect would also exist for sad mood and negative menopausal schemata, but it is possible that the combination of both may lead to increased attention on hot flush experiences. Certainly, the symptom perception hypothesis suggests that middle-age women high on NA are likely to have an attentional bias towards somatisation associated with flushes. Those women may misattribute ambiguous menopausal stimuli, and symptom reporting accuracy may be undermined (interpretative bias).

**Anxiety sensitivity**

Similar to negative affect, anxiety sensitivity is linked to heightened attention to physical threats. Several pain studies have identified the possible mediating role of the interpretative bias between AS and pain, especially in women (Keogh & Cochrane, 2002; Keogh, Hamid, Hamid, & Ellery, 2004; McNally, Hornig, Hoffman, & Han, 1999). Mediation via the selective attention bias has, however, received mixed support (Keogh, Dillon, Georgiou, & Hunt, 2001; McNally et al., 1999). In an attempt to better understand the biopsychosocial mechanisms of hot flushes, Hanisch and colleagues developed a novel approach by comparing flushes with panic attacks (PA) from the point of view of symptomatology, physiology, neurobiology and pharmacology. They found striking resemblances in all those domains. Particularly, they noted some similarities between PA and HF in triggers (stress, yohimbine and caffeine), symptoms (palpitations, dyspnoea, and emotional distress for some women experiencing HF), physiological indicators (increased body temperature and heart rate), neurocircuitry (cingulate cortex, insula, thalamus, hypothalamic nuclei, locus coeruleus), biochemical mechanisms (noradrenergic dysregulation) and pharmacological treatment options (SSRIs, SNRI, gabapentin and clonidine).
Given the overlaps in the presentation of panic attacks and hot flushes (Hanisch, Hantsoo, Freeman, Sullivan, & Coyne, 2008) and that it is “the perception and interpretation of the different sources of information that leads to the construction of the illness representation” (Hagger & Orbell, 2003, p. 142), it is likely that menopausal women scoring high on anxiety sensitivity scales would over-report HF and/or NS. An association between AS and frequency of HF is supported by a study by Thurston et al. (2005), which found that women with higher somatisation scores subjectively reported more HF that could be objectively measured. Hunter and Haqqani (2011) also found in a pilot study that women with higher sensitivity and selective attention to small variations in thermoregulatory sensations (attentional bias) tended to over-report flushes in the mild to moderate range. Based on McNally (2002)’s model of AS, Hanisch et al. (2008) hypothesised that women with elevated anxiety sensitivity would also experience more severe and distressing flushes because of elevated anxiety and fear during flushes. The findings of Hunter and colleagues, mentioned earlier, that flush beliefs mediate the relationship between somatic amplification and HF perceived severity suggest that anxiety sensitivity may also impact upon flushes severity via the mediation of HF beliefs, rather than directly. This assumption has not yet been tested.

**Catastrophic thinking**

The concept of catastrophic thinking includes three distinct yet correlated factors, magnification (e.g., “This is terrible!”), rumination (e.g., “I can’t stop thinking about it”) and helplessness (e.g., “I can’t do anything about it”). Anxious individuals, and in particular worriers, tend to catastrophise more than non-anxious or non-worrying individuals (Davey & Levy, 1998; Whaley, Pinto, & Sigman, 1999). Furthermore, a self-perpetuating pattern seems to occur whereby catastrophic thinking of bodily sensations and health-related anxiety contribute to one another over time (Gautreau et al., 2014). In a study of cognitive representations of patients undergoing lung cancer surgery, Lehto and Cimprich (2009) found that perception of treatment control improved for low worriers over time, but diminished for high worriers. Unsurprisingly, studies of the menopause have also shown that women who tend to catastrophise also hold weaker beliefs about control, and experience more distressing vasomotor symptoms (Reynolds, 2000). In fact, a 5-year longitudinal study by Reynolds (2002b) concluded that distress relating to flushes was most closely related to catastrophic thinking. An earlier largely qualitative study of 56 menopausal women by Reynolds (1997b) found that individuals most distressed by hot flushes tended to catastrophise by negatively interpreting physical sensations so as to cause panic. Those women described “fears of passing out, dying,
being unable to breathe, exploding with heat and being totally exhausted during flushes” (Reynolds, 1997b, p. 316). It is possible that flushes trigger negative appraisals (for example fear of social criticism), which would lead to a greater sympathetic activity resulting in panic-like symptoms. In turn, negative cognitions about the panic state may lead to more catastrophic thinking that brings on additional distress (Hanisch et al., 2008). Figure 5 shows the possible physiological and cognitive mechanisms by which catastrophising may amplify the experience of vasomotor symptoms.

![Proposed physiological and psychological flushes amplification pathways due to catastrophic thinking.](image)

_Sullivan et al. (2001) offered a theoretical explanation for the relationship between catastrophising and pain based on the schema-activation model, which can be adapted to menopause research. They proposed that catastrophisers possess a “pain schema” based on excessively negative pain experiences and pessimistic beliefs about pain or their inability to cope with it in the future. Similarly, catastrophising women may be more likely to form negative “HF schema” than non-catastrophising women from perceived distress during HF and the belief that they were unable to control them. Whether or not panic is involved, a catastrophising misinterpretation of symptoms is likely to lead to perceived heightened negativity about HF or NS, and more distressing symptoms are also likely to induce more_
catastrophising thinking. Whilst catastrophic thinking seems to be a salient factor in the perception of loss of control (and vice versa), catastrophising has also been linked to other representation dimensions, albeit not in menopausal studies. For instance, a study of fibromyalgia patients conducted by van Wilgen and colleagues (2008) found that catastrophic thinking was negatively related to illness coherence (though it is likely that the inability to understand fibromyalgic symptoms also increases catastrophic thinking), and positively correlated to cyclical timeline and emotional representations. All in all, our understanding of how catastrophising relates to menopausal representations remains limited, but as catastrophic thinking can be altered through psychotherapy (Schutze et al., 2009), it seems intuitive to understand how it may influence menopausal representations and the experience of vasomotor symptoms.

Research on catastrophising has mostly focused on pain catastrophising, and very little is known about whether catastrophic cognitions individuals hold about life events in general also apply to specific events, such as vasomotor symptoms. Sullivan and colleagues (2001) asserted that individuals who catastrophise in pain-related situations might also catastrophise in general situations that do not involve pain, but no study has tested this assertion. Campbell et al. (2010) tested if experimental (i.e., heat, cold, and pressure pain), situational (i.e., catastrophising measured during or directly after the administration of noxious stimulation) and dispositional (i.e., assessed by individuals’ recall of catastrophising in daily life) pain catastrophising measures correlated across multiple samples: healthy, with painful arthritis, and with painful temporomandibular joint disorders (TMD). Dispositional catastrophising was measured with the Pain Catastrophizing Scale (PCS) and situational catastrophising with the Situational Catastrophizing Questionnaire, an adaption of the PCS. The researchers found mixed results with significant relationships between situational and dispositional catastrophising in the TMD group, but no significant correlations in the healthy and arthritis groups. Clearly, those results are mixed and remain limited to pain catastrophising. Provancher and colleagues (2000) investigated catastrophic thinking in worriers and non-worriers across a number of worry scenarios. Using a comprehensive list of worry themes generated by the Categorization Grid for Worries and interviews assessing catastrophizing across those themes in a sample of 607 students, they found that high worriers evaluated fear consequences for each worry as objectively more severe and as more likely to happen than low worriers. The authors concluded that the results could be explained by availability heuristics, whereby participants made judgments based on the ease of retrieval from information stored in the long term memory. Further analyses of results also revealed that
high worriers seem to possess more tightly organized threat schemata than nonworriers. Based on previous research, the authors posited that,

“As the sequence of catastrophic consequences proceeds downward, anxiety increases […] This, in turn, renders threatening information even more accessible and leads to overestimation of the probability of occurrence of negative events […] In order to minimize entertaining such negative consequences and the uncomfortable somatic activation that accompanies them, high worriers may use cognitive avoidance by switching to more surface level worries that are less severe and less anxiety provoking.” (p. 221)

**Depressive symptoms and negative affect**

Much has been written about the association between the menopause and depression and it is beyond the scope of this chapter to review this extensive literature (for current accounts of this association, refer to Freeman, Sammel, Boorman, & Zhang, 2014 and Judd, Hickey, & Bryant, 2012). To date, the causal link between vasomotor symptoms and depressed mood remains unclear, a conclusion supported by Hunter and colleagues in a recent study of 10,418 British women aged 54-65 (Hunter et al., 2012). On the other hand, the influence of depression on the experience of vasomotor symptoms has received much less attention, and this section focuses on how depressive symptoms may affect vasomotor symptoms via the mediation of menopausal beliefs. To understand how this may be the case, the review of two theoretical frameworks, the Affect Infusion Model and the Mood-state Dependence hypothesis, is useful.

A theoretical foundation for how mood can influence cognitive processes and beliefs comes from the Affect Infusion Model (Forgas, 1995). The model posits that “affectively loaded information exerts an influence on, and become incorporated into cognitive and judgemental processes, entering into a person’s deliberations and eventually colouring the outcome” (Forgas, 2001, p. 101). Affect infusion depends upon a person’s motivation and information processing capacity, and increases when situations are unfamiliar, atypical and/or complex. As a rule, positive mood increases heuristic processing, while negative mood increases more comprehensive systematic processing (Armitage, Conner, & Norman, 1999). Affect infusion has been found to distort highly important cognitions such as illness beliefs, with negative mood associated with poorer perceived health, more symptoms reporting, lowered perceived self-efficacy and increased vulnerability, perhaps through greater accessibility of congruent,
negatively valenced illness-related memories and the tendency to focus attention inwards rather than on external stimuli (Croyle & Uretsky, 1987; Salovey & Birnbaum, 1989). Cognitive theory posits that individuals prone to depression endorse negative cognitive schemas about themselves, the world and the future, but empirical research suggests these dysfunctional beliefs remit when depressed individuals become asymptomatic (Haaga, Dyck, & Ernst, 1991). Building on findings that negative mood primed individuals with previous episodes of depression to endorse more dysfunctional attitudes than individuals with no such history (Miranda & Persons, 1988; Miranda, Persons, & Byers, 1990), Miranda and Gross (1997) advanced the Mood-state Dependence hypothesis, which holds that dysfunctional beliefs are “dormant” in asymptomatic individuals vulnerable to depression, and are activated by negative mood and stressful events. They hypothesised the existence of fundamental distinctions between vulnerable and non-vulnerable individuals with the former differing in how they evaluated situations, how quickly they translated negative emotions into negative mood, and how their cognitive processes closely interacted with their mood. Experimental and cross-sectional research on dysfunctional attitudes has supported this hypothesis (Miranda, Gross, Persons, & Hahn, 1998; Roberts & Kassel, 1996).

In summary, it appears that negative mood or affect is likely to directly influence the formation of health beliefs, and, furthermore, acts as a mediator between depressive symptoms and beliefs for those currently depressed or with a past history of depression. As such, it can be assumed that women with negative affect are more likely to endorse negative beliefs about the menopause, and this will be particularly true for those with depressive symptoms or a history of depression. As highlighted earlier, Hunter and Chilcot (2013) found no evidence that HF/NS beliefs mediated the relationship between depressive mood and HF/NS problem ratings. In an earlier proposed cognitive model, Hunter and Mann (2010) had suggested that depressive mood may impact upon negative affect, which in turn would influence somatic amplification (and thereafter VMS frequency). This model also predicted a correlation between depressive mood and flushes beliefs. When the model was subsequently tested, Hunter and Chilcot (2013) did not include negative affect and the regression index between depressive mood and flushes beliefs was not provided. In view of the solid theoretical framework highlighted above, the potential mediation pathway depressive symptoms-negative affect-menopausal representations warrants further exploration.
Control beliefs

Control beliefs (or perceived control) are a central component of psychological adjustment to negative events (Thompson, 2002) and, although motivation and intent are important factors in health behaviour, individuals with a strong sense of control are more likely to select adaptive coping strategies (Peterson & Stunkard, 1989; Wallston, Wallston, Smith, & Dobbins, 1987). Control beliefs are closely related to Bandura (1977)’s concept of self-efficacy, which reflects confidence in one’s ability to exert control over one's own motivation, behaviour, and social environment. Self-efficacy, according to Bandura, varies along three dimensions: magnitude (of the task compared to others), strength (of the conviction an individual has about successful performance) and generality (the extent to which expectation is generalized across situations), with good support for the latter (Bandura, Adams, Hardy, & Howells, 1980). Wallston and colleagues (1987) argued that, whilst perceived control is a central psychological construct in health behaviour, it operates in interaction with other important constructs. For instance, depressed or anxious individuals tend to have lower estimates of control than non-depressed or non-anxious individuals, but perceived control also moderates the relationship between stressors and anxiety or depression (Evans, 1981; Johnson & Sarason, 1978; Rapee et al., 1996; Wardle et al., 2004). Further evidence of interactions comes from pain research, which has highlighted an inverse relationship between perceived control and catastrophising and the role of control beliefs in mediating the relationship between treatment-related changes in pain intensity and activity interference (Sullivan et al., 2001; Turner, Holtzman, & Mancl, 2007).

It seems particularly relevant to measure control beliefs when studying cognitions about HF/NS as perceived lack of control over flushes has been identified as a major cause of distress in several studies (Chedraui et al., 2010; Reynolds, 1997a, 1997b). Using case-crossover analysis of hot flush diaries and self-reported and ambulatory monitoring of hot flushes, Thurston et al. (2005) found that subjective hot flushes not meeting physiological criteria were more likely after decreased feelings of control, yet, objectively measured flushes were more likely after feelings of control. The reporting of higher false-positive reporting of VMS is surprising, but consistent with other findings in this study that positive emotions were associated with objective hot flushes and negative emotions with false-positive flushes. The authors assumed that emotions may influence affect symptom perception and, indeed, it is possible that decreased feelings of control before self-reported hot flushes may operate through the processes of ruminating and catastrophising.
It is expected that lack of control would be perceived at two levels: (1) in terms of inability to predict and control the onset of hot flushes, given that 50% of hot flushes takes place independently of external and internal triggers (Hunter & Mann, 2010), and (2) in terms of inability to manage flushes after onset. While the former would relate strongly to dimensions of shame and embarrassment when hot flushes are experienced publicly, the latter is likely linked to self-mastery. Johnson-Wright, Afari, and Zautra (2009) proposed that illness uncertainty may mediate the relationship between some psychological antecedents (learned helplessness, sense of mastery, and locus of control) and outcomes of illness. This proposition is likely to apply to hot flushes as well, because of the number of uncertainties relating to VMS: 1) the process by which flushes are triggered remains unknown, and many women are confused about the aetiology of their menopause (Hunter, 1992), 2) the timeline of experiencing hot flushes, both for onset and duration, is unpredictable, and 3), most importantly, despite several triggers being identified, flushes often occur randomly. Adding to this unpredictability, women often experience uncertainty within the broader experiential context in which the menopause takes place that may include factors such as aging, the empty nest, and family and work role changes.

Reynolds (1997a) surveyed a convenience sample of menopausal women with regard to flush frequency, flush distress and control beliefs at time 1 ($N = 43$) and time 2 ($N = 31$, 12 months interval). The Perceived Control Index (PCI), a 15 item scale adapted from the Arthritis Helplessness Index, was used to measure control over flushes. Participants were also asked to indicate their levels of distress and control for both onset of flushes and feelings during flushes on a 0-100mm visual analogue scale. As would be expected, results highlighted that most women felt little control over the onset of flushes (11/100 on average), but there were wide variations between participants with respect to control over feelings during flushing, from 2/100 to 100/100. Results also showed that perceived control over feelings was a stronger predictor of self-rated distress during flush episodes than flush frequency, and that women with low perceived control experienced high numbers of self-reported daily flushes. These correlational results held from time 1 to time 2. Comments provided by participants indicated that those with low control over feelings “felt psychologically trapped by flush sensations (and the burden of negative social attitudes)”, leading the author to conclude that “It was this latter form of helplessness over the subjective experience that was more predictive of distress during flushing” (p. 11). Reynolds (2002b) extended her previous study by examining changes or consistencies for the same measures.
over a five year span. This follow-up study highlighted consistency in levels of perceived control: women who perceived having high control were similarly positioned five years later. However, perceived control and flush distress were no longer correlated at time 2, suggesting that participants gained higher control over both physical and emotional aspects of their vasomotor symptoms with time. Interestingly, but perhaps not surprisingly, perceived control was positively associated with internal health locus of control, a measure introduced in the follow-up study, highlighting that perceived control and responsibility for one’s own health also translate to having control specifically over vasomotor symptoms.

In terms of the relationship between perceived control and menopausal representation, it is plausible to predict that perceived control would strongly predict the control dimension of the cognitive representation. There is also empirical evidence that control over consequences plays a particularly important role in adjustment to psychological distress (Jensen, Turner, & Romano, 2007; Ledrich & Gana, 2013), thus a strong perceived sense of control might lead an individual to foresee a reduced impact from the menopause. The relationships with other aspects of cognitive or emotional representations remain unclear and warrant further investigation.

**Body consciousness and self-objectification**

Study of adolescents has found that self-surveillance may be an evaluative form of rumination about actual or perceived body change that develop in the early adolescent period (Hyde et al., 2008). Although body dissatisfaction remains relatively stable throughout life, self-objectification tends to diminish with age with reduced subjective pressure to conform (Tiggemann & Lynch, 2001). Women who self-objectify tend to critically focus on themselves by internalising perceived external judgement, and there is likely a bidirectional relationship between trait self-objectivity and negative affectivity (Miner-Rubino, Twenge, & Fredrickson, 2002). Not surprisingly, self-objectifying women often experience body shame, body disgust, and appearance anxiety (Miner-Rubino et al., 2002) and, for some women, those feelings are likely to be enhanced during the menopause, especially considering the stereotyping of menopausal women in Western countries and the association between the menopause and loss of valued self-image (Estok & O’Toole, 1991). Evidently, shame and embarrassment are a persistent theme highlighted by women experiencing distressing hot flushes in public, and reinforced with shaming self-labels of *unattractive, useless, dirty, 'past it', ridiculous* (Hunter & Liao, 1995; Rendall et al., 2008; Reynolds, 1997b, 2002a). These feelings are particularly accentuated in work
situations and in the company of men (Reynolds, 1997b, 1999a), and younger body-conscious women may be particularly sensitive to experiencing public embarrassment. High body consciousness and the link to shame and embarrassment in social situations may also partly explain why women with high BMI seem to be exceedingly distressed by hot flushes (Hunter et al., 2012), although BMI does not seem to be correlated to self-objectification (McKinley & Lyon, 2008; Tiggemann & Lynch, 2001).

Thus far, the limited research on the link between body consciousness and menopausal attitudes or beliefs has found a positive association between body dissatisfaction and negative attitudes towards the menopause (Rubinstein & Foster, 2013). In particular, heightened body surveillance is associated with negative general attitudes towards the menopause, while body esteem is related to dimension of appearance on menopausal attitudes scales (McKinley & Lyon, 2008). Conversely, women who are more satisfied with their body tend to have a more positive menopausal experience and report fewer symptoms (Bloch, 2002). It may be difficult, however, to differentiate the perceived impact of the menopause and of aging on body changes. In depth interviews with menopausal women conducted by Rubinstein and Foster (2013), revealed that women saw the menopause as an important causal factor for their changing body because the menopause represented a “tangible” marker of ageing. This may partly explain why high self-objectifiers, who are more likely to fight the effects of aging and stereotypes of older women (Rubinstein & Foster, 2013), hold particularly negative views of the menopause.

As would be expected, having negative thoughts about the self is highly associated with difficulty coping with menopausal changes and reported distress during flush episodes, especially in social situations (Reynolds, 2002a). Yet, the perception of others’ beliefs during flushes is often inaccurate. Smith et al. (2011) surveyed young (25-45 year-old) men and women’s perception of women having hot flushes and they did not generally report negative emotional reactions, with the majority (60%) of observers of flushes misattributing the redness and sweats to other factors (temperature, exhaustion, etc.). In fact, empathy was more likely to be the feeling expressed when witnessing flushes. This misconception can be explained by the fact that, although individuals highly conscious of their body are finely attuned to others’ perceptions of them, they do so with a bias of being negatively judged. Moreover, and perhaps paradoxically, those individuals are less likely to be in tune with their body and are more likely to misjudge their own bodily cues because of mutual antagonism.
between internal and external attentions (Barlow, 2002). Women displaying hypervigilance to both body appearance and symptoms (i.e. scoring high on body consciousness and anxiety sensitivity scales) are thus likely to have difficulty interpreting hot flushes, when somatic responses of embarrassment and possibly panic are present, and may be more prone to experience distressing hot flushes. The role of menopausal representations as a mediator in this relationship is yet to be tested, but it is plausible that the consequence and control dimensions of the cognitive representation may be strong mediators.

The impact of stress

The association between perceived stress and vasomotor symptoms has been well documented (Gold et al., 2004; Kuh et al., 1997; Swartzman et al., 1990). Stress, either acute or chronic, is believed to impact on frequency and intensity of HF/NS, probably by reducing the body temperature threshold for triggering them at the hypothalamic level, and/or by increasing central sympathetic activity (Swartzman et al., 1990; Tuomikoski et al., 2011). When monitoring stress and VMS in laboratory settings, Swartzman et al. (1990) found that more objectively recorded hot flushes could be measured during stress sessions than during non-stress sessions, but stress conditions did not influence subjectively reported flushes. Furthermore, Hunter and Chilcot found that subjectively measured stress failed to predict physiologically measured or self-reported flushes (Hunter & Chilcot, 2013). This implies that the association between induced stress and VMS frequency may hold for objective measures of stress and VMS, but not for subjective measures of either variable. Yet, in their cross-sectional study, mentioned earlier, Thurston and colleagues (Thurston et al., 2005) found that the association of perceived stress, as measured by the Daily Stress Inventory, and VMS followed the same pattern as the association between control beliefs and VMS: objectively measured flushes were less likely to occur after increased perceived stress, although flushes were more likely to be self-reported after stress. Whilst, again, those findings are surprising, they highlight that the relationship between stress and VMS frequency is complex and still poorly understood.

There has been limited research on the impact of perceived stress on VMS bothersomeness, either directly or indirectly via other cognitive processes. When testing their cognitive model of hot flushes and night sweats, Hunter and Chilcot (2013) found that perceived stress was correlated to the problem-rating of VMS, and while it did not predict directly problem-rating in structural modelling analyses, it did explain the greatest amount of
variance in beliefs about the menopause, underlying the role of cognitive factors. Stress is also likely to heighten the impact of other cognitive factors described above, such as anxiety sensitivity, depressive symptoms and negative affect (Hammen, 2005; Miranda & Gross, 1997; Shostak & Peterson, 1990).

Conclusion

This chapter provided theoretical and empirical evidence to understand a range of cognitive and emotional processes found to relate to the experience of vasomotor symptoms. In particular, it highlighted that the SRM is an appropriate framework to understand the relationships between cognitions, emotions, menopause representations, coping strategies and the VMS experience. The mediating role of coping as proposed by the SRM, however, remains unclear and warrants further investigation. Hunter and Chilcot (2013) have provided the best cognitive model applicable to flushes so far. The testing of this model, whilst not incorporating behavioural strategies, has helped clarify the direct and indirect relationships between cognitive and mood dispositions and HFNS. While the inclusion of anxiety, depressive mood, somatic amplification, dispositional optimism and stress has furthered our understanding of how psychological factors influence the experience of VMS, other cognitive and emotional factors may play a role. Furthermore, the finding that depressive mood did not have significant direct or indirect effects on flush beliefs or VMS is puzzling. It is possible that depressive symptoms need to interact with negative affect to produce an effect, and this will need to be explored. A review of the literature on vasomotor symptoms revealed that specific cognitions and emotions are experienced alongside vasomotor symptoms. This led to selecting five relevant dispositional cognitive and mood factors (anxiety sensitivity, catastrophic thinking, depressive symptoms, control beliefs and body consciousness) that are likely to influence the experience of flushes, either directly or via the mediation of menopausal representations. Stress is also expected to have an interaction with those factors, as well as an influence on beliefs and VMS. Together, these factors can be conceptualised as conferring vulnerability on women, or increasing risks of negative flush experience, and are therefore referred to as vulnerability factors.

This chapter serves to inform the integrative cognitive-behavioural model of VMS proposed in the current study. The cognitive processes surrounding health issues are often complex, and trying to piece together a model that takes into consideration physiological, cultural and psychological factors is challenging. Defining a model that reflects the intricate
relationships between elements relating to hot flushes and night sweats is no exception. Nevertheless, there is solid theoretical and empirical evidence on which to construct this model, which is presented in the next chapter, along with the research hypotheses.
CHAPTER 5
AIMS AND HYPOTHESES

As described in the previous chapters, the menopause is a physiological event marking the end of the reproductive stage, and hot flushes and night sweats are the most commonly experienced menopausal symptoms. Despite being linked to endocrine changes, HF/NS are not experienced by all women, and there are large variations amongst women who experience them, with significant differences in both frequency and impact on emotional well-being and functioning. Research has also shown that concordance rates for frequency between objectively and subjectively measured flushes are low (Mann & Hunter, 2011). Together, these findings suggest that thoughts and emotions are likely to play a significant role in the experience of vasomotor symptoms. Social cognitive health models emphasise the influence of perceptions on health threat experiences and, not surprisingly, menopausal research has shown that women’s beliefs or representations of the menopause have a strong impact upon their experience of VMS.

Psychological research on VMS is, however, in the early stages, and given increasing trends worldwide for women seeking alternative therapy to HRT medication (Barbaglia et al., 2009; Blümel et al., 2004; Fournier et al., 2011; Steinkellner et al., 2012), there is an urgent need to develop psychological therapy that focuses on the distress some women experience in association with flushes. Hunter and colleagues’ previous work has advanced our understanding of the influence of psychological factors on flushes (Hunter & Chilcot, 2013; Hunter & Liao, 1995; Hunter & Mann, 2010), and those researchers have recently conducted randomised controlled trials of VMS-focused CBT (Ayers et al., 2012). There remain, nonetheless, many gaps in our knowledge of psychological factors linked to the experience of VMS. In view of our limited understanding of these factors, the broad aim of this study is to gain a better knowledge of women’s cognitions about the menopause.
Aim 1: Understanding menopausal representations

First, we know relatively little about the structure of beliefs about the menopause. Leventhal’s Self-Regulation Model, with its focus on both cognitive and emotional representational contents of health threats, provides a useful framework for understanding these beliefs. To date, the only study that has applied the SRM to the menopause has focused on correlational analyses with coping and health outcomes and path analyses between those variables, but the authors did not provide descriptive information about the content of the Menopausal Interpretations/Perceptions Questionnaire (MIPQ), the questionnaire they developed for the study (Chou & Schneider, 2012). The same authors later published a confirmatory factor analysis of the MIPQ (Chou & Schneider, 2014), but, again, descriptive statistics for the subscales were not included. So far, the only data available on how women represent their menopause using the SRM dimensions has been published by Hunter and O’Dea (2001) - this data was presented in Chapter 3. The first aim of this study is to further our understanding of menopausal representations, and will address the following three questions:

1. What are the cognitive and emotional representations of the menopause held by middle-aged women?
2. Are menopausal cognitive and emotional representations independent, or inter-correlated?
3. Are there significant differences in cognitive and emotional representations across menopausal stages?

Previous research has highlighted the fluidity of menopausal beliefs or attitudes, which are likely to become more positive as women transition through menopausal stages (Ayers et al., 2010; Chou & Schneider, 2014; Delanoë, 2001a; Wilbur et al., 1995). The affective forecasting theory, described in Chapter 2, provides an explanation as to why this may be the case: individuals tend to under-estimate their existing coping ability when thinking of future negative events, while over-estimating their emotional reactions to such events, and also fail to take into consideration other future events that may have buffering effects.

\[ H_1 \quad \text{Given the existing theoretical and empirical evidence, it is predicted that menopausal representations will be significantly more negative for pre- and perimenopausal women than for postmenopausal women.} \]
Aim 2: Testing how cognitive and emotional factors interact with the menopause representations and vasomotor symptom appraisals

Chapter 3 highlighted the role of medical practitioners, the media, and significant others in influencing menopausal representations, and concluded that despite confusion surrounding the menopause and its treatment, and enduring negative stereotypes of menopausal women, women remain neutral or positive in the way they represent their experience of menopause. Yet, despite evidence that thoughts and emotions play an important role in the perception of flushes, little research has focused on the filtering role of menopausal schema and how women’s cognitive and emotional profile may contribute to those schemas.

First, very little is known about the specificity of cognitions about vasomotor symptoms and how these relate to general cognitions. We know that women who report more catastrophic thoughts tend to report lower perceived control over flushes (Reynolds, 2000), but we do not know whether general catastrophic thinking and perceived control are associated with corresponding VMS specific cognitions. Overwhelmingly, catastrophic thinking studies have focused on pain catastrophising, but schema research suggests that anxious individuals are likely to form organised catastrophising schemata that are activated for specific events (Provencher et al., 2000; Sullivan et al., 2001). The self-efficacy theory, and in particular its generality assumption, also provides evidence that confidence in one’s ability to exert control is likely to apply across events (Bandura, 1977; Bandura et al., 1980). The fourth preliminary question this research will seek to answer is:

4. Do women possess vulnerabilities (catastrophic thinking and control beliefs) that are specific to the menopause? In agreement with the above, the following hypothesis was examined:

$$H_2 \quad \text{Women who tend to catastrophise generally will also tend to catastrophise about their hot flushes, and women who hold strong control beliefs generally will also hold strong control beliefs about their hot flushes.}$$

Hunter and Chilcot (2013) tested a cognitive model of flushes that highlighted the impact of possible vulnerabilities on flush beliefs; these included anxious and depressive mood, perceived stress as well as specific dispositional traits, such as optimism and somatic amplification. The model also underlined the direct and indirect effects (via beliefs about hot
flushes) of those variables on flushes problem-rating and frequency of flushes, measured both objectively and subjectively. Recent advances in statistical techniques, such as Structural Equation Modelling, have allowed for more complex psychological models to be tested (Tomarken & Waller, 2005). Those models, however, are rarely comprehensive, and while Hunter and Chilcot’s model greatly advanced our understanding of beliefs about flushes, other factors are yet to be studied. Researchers are faced with two central questions when testing psychological models: (a) Which variables need to be included? and (b) How do these variables combine to influence outcomes. As shown in Chapter 4, anxiety sensitivity, catastrophic thinking, body consciousness and control beliefs merit consideration due to their relevance in the experience of vasomotor symptoms. Perceived stress, the strongest predictor in Hunter and Chilcot’s model remains a variable of strong interest. While Hunter and Chilcot included depressive mood, a comprehensive measure of depression that is inclusive of all three aspects of depression - cognitive, emotional and behavioural – should also be considered, as should negative affect, a measure of negative transient state. Furthermore, whilst we know that menopausal beliefs strongly predict VMS bothersomeness and weakly predict subjectively measured frequency, we have limited knowledge on how they impact upon daily functioning.

Drawing on previous work by Hunter and colleagues (Hunter & Chilcot, 2013; Hunter & Liao, 1995; Hunter & Mann, 2010), Leventhal’s Self-Regulation Model, cognitive theories, as well as the literature review of psychological and emotional factors linked to VMS presented in Chapter 4, an initial cognitive model of VMS was developed and illustrated in Figure 6. It included the following hypotheses:

There will be direct effects from cognitive and emotional factors on the appraisal of VMS, in such a way that:

- $H_3$ Catastrophic thinking, control beliefs, negative affect, perceived stress and negative body consciousness will predict HF/NS bothersomeness, and;
- $H_4$ Anxiety sensitivity will predict perceived HF/NS frequency.
Figure 6. Proposed cognitive model of vasomotor symptoms.
Note: Dotted arrows indicate direct effects of cognitive and emotional factors on appraisal of VMS

In line with Miranda and Gross (1997)’s mood-state dependence hypothesis, which states that dysfunctional beliefs are activated by negative mood for individuals vulnerable to depression, the following hypothesis was proposed:

\[ H_5 \quad \text{Depressive symptoms will influence negative affect, which in turn will influence the menopause representation.} \]

Moreover,

\[ H_6 \quad \text{Negative menopause representations will predict the negative appraisal of HF/NS as measured by perceived frequency and bothersomeness, and;} \]
\[ H_7 \quad \text{HF/NS frequency will predict HF/NS bothersomeness, and;} \]
\[ H_8 \quad \text{HF/NS perceived bothersomeness and frequency will predict daily interference due to vasomotor symptoms.} \]
There will also be a mediation effect of the menopause representations as follows:

\[ H_0 \] The effects of anxiety sensitivity, body consciousness, negative affect, catastrophic thinking, control beliefs and perceived stress on HF/NS perceived frequency, bothersomeness and daily interference due to VMS will be mediated by menopause representations.

**Aim 3: Testing how coping interacts with cognitive and emotional factors, the menopause representations and vasomotor symptom appraisals**

To date, no studies have investigated the relationships between the above mentioned cognitive/emotional factors, menopause representations, appraisals of vasomotor symptoms, and specific VMS related coping strategies. The one study that has tested the SRM for the menopause only included general coping measures, and did not include any appraisals of flushes (Chou & Schneider, 2012).

The first two hypotheses in this section relate to avoidance coping. Avoidance is most often regarded as a maladaptive coping mechanism (Zeidner & Endler, 1996), and it is a variable of particular interest because of its demonstrated relationships with anxiety and depression, and presumed association with negative experiences of flushes (see Chapter 2).

5. **What are the relationships between women’s cognitive and emotional profile and coping strategies?**

\[ H_{10} \] Given the theoretical and empirical support for the bidirectional relationship of avoidance with depression and anxiety symptoms, it is predicted that women with high anxiety sensitivity, high catastrophic thinking, low control beliefs, and depressive symptoms will use more avoidance coping than other types of coping strategies.
6. What are the specific relationships between menopausal representations, coping, and the appraisal of HF/NS? Partly drawing on previous meta-analyses of studies using the SMR (Dempster et al., 2015; Hagger & Orbell, 2003), it is hypothesised that,

$$H_{11}$$  **Strong illness identity, low controllability, chronic timeline and negative consequences will be associated with avoidance coping, and in turn avoidance coping will be associated with higher levels of HF/NS related bothersomeness.**

Hagger and Orbell’s review concluded that the SRM provided a useful framework to understand a large number of health threats, but found limited support for the role of coping in mediating the relationship between illness representations and illness outcomes. In particular, they noted that the direct effects between illness representations and illness outcomes were stronger than the indirect effects via coping strategies. This raises questions about the role and importance of coping in the model, and to date, no studies of vasomotor symptoms have systematically examined the indirect contribution of coping strategies in the model. Given Hagger and Orbell’s findings, it is hypothesised that,

$$H_{12}$$  **The direct effects between menopausal representations and VMS appraisal, as measured by perceived frequency, bothersomeness and daily interference due to VMS, will be stronger than the indirect effects via coping.**

Hunter and Mann (2010) suggested that cognitive appraisals of VMS would predict behavioural strategies, but, when testing the model, Hunter and Chilcot (2013) did not include any measures of coping. At this stage, it is therefore unclear whether women use specific coping strategies as a result of their appraisal of VMS or, as the SRM would suggest, behavioural strategies predict VMS appraisals. Two competing models can therefore be conceived (see Figure 7), with each proposing the following alternative pathways: menopausal representations predict appraisal of flushes, which in turn predict coping, or menopausal representations predict coping, which in turn predicts appraisal of flushes. Both models will be tested to assess which offers the best fit. An integrative cognitive-behavioural model of vasomotor symptoms will be presented as a conclusion of findings from Aim 2 and Aim 3.

The next chapter will describe the method employed by the study.
Figure 7. Alternative models for the relationships between menopause representations, VMS appraisals and coping behaviour.
CHAPTER 6

METHOD

Methodological approach

This research used a cross-sectional design, which was designed to capture the distribution patterns of the numerous dimensions of the proposed research model and the associations between them. Conversely, such a design does not provide definite information about causal relationships, and relies strongly on a sound theoretical framework to allow for inferences to be made. In this study, the Self-Regulation Model of illness behaviour provided such a framework.

Participants

Recruitment of participants

Participants were females aged between 40 and 60 ($n = 517$), drawn from a large community cohort ($N = 7,615$), recruited as part of the Rural Mental Health Research Study (RMHRS, Murray et al., 2004). Initially randomly sampled from the electoral roll in a rural area of approximately 540,000 square kilometres from northern New South Wales (NSW) to southern Victoria, Australia, the current sample was drawn from participants who had indicated a willingness to be involved in ongoing research over the previous 11 years. Whilst the original sample region varied in terms of demographic, historical and economic development, it had a predominantly Australian-born population.

Inclusion criteria

This study aimed to include women who were currently, or had previously experienced menopausal vasomotor symptoms. Thus, to be eligible to take part, participants had to be women aged between 40 and 60 years old (Soules et al., 2001); this represented 1,648 potential participants. The most recent research suggests HF/NS are experienced for longer periods than previously documented (Hunter et al., 2012; Politi et al., 2008); hence an age span of
twenty years appeared sufficient to capture women’s vasomotor experiences across the pre-, peri- and postmenopausal stages. By virtue of this age range, this research excluded women undergoing premature menopause, defined by being menopausal at the age of 40 or less (Singer, 2012). It included, however, women who had undergone a premenopausal hysterectomy and/or unilateral (removal of one ovary) or bilateral (removal of both ovaries) oophorectomy. Figure 8 presents the flowchart for recruitment, with pre-study estimated sample sizes.

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**Figure 8.** Estimated sample flowchart.

1 In the past or currently
Research questionnaire

Construction of the questionnaire

This study was part of a wider research study examining women’s health in mid-life, thus the questionnaire included measures that are not reported in this thesis. The questionnaire was 18 pages long and consisted of four sections: Section 1 gathered demographic information, Section 2 concerned general physical and mental health, Section 3 contained general cognitive and emotional scales, Section 4 pertained to participants’ menopausal experience, including VMS specific cognitive scales. It included 19 established scales, 14 of which were used in the current study. A free-text section at the end of the questionnaire allowed for participants to write comments about their health and well-being.

Demographics

Demographic data gathered included age, weight, height, education, employment, family relationships, living situation, children and ethnicity.

Menopausal status and medical information

STRAW Criteria

To determine the menopausal status of participants, the study used the Stages of Reproductive Aging Workshop (STRAW) +10 criteria (Figure 9), a system considered the gold standard for characterizing women’s reproductive aging stages through to the menopause (Figure 2; Harlow et al., 2012). Initially developed in 2001, it was revised in 2011 to incorporate the latest research and reviewed several staging criteria. In this study, women were identified by their response to questions about their menstruations as either being early premenopausal (Stage -3b), late premenopausal (Stage -3a), early perimenopausal (Stage -2), late perimenopausal (Stage -1), early postmenopausal (Stages +1a, +1b, +1c) or late postmenopausal (Stage +2). Appendix A describes how these stages were operationalised.
Medical information

Medical information questions included whether or not participants had had a hysterectomy and/or a full oophorectomy, as well as use of Hormone Replacement Therapy and contraceptive methods. Participants were also invited to list their current medications along with the use for each of them.

Measures of general health

Physical and mental health: Short-Form Health Survey (SF-12)

The SF-12 (Ware, Kosinski, & Keller, 1996) is a 12-item, short-form version of the SF-36, which has been widely used in menopausal studies and in earlier waves of data collection in the RMHRS. The SF-12 assesses participants’ level of health along two dimensions, namely, physical and mental health. The current study used the first version of the SF-12, due to licensing rights. It comprises eight sets of questions relating to perceived general health, physical functioning, role limitation due to physical and emotional problems, bodily pain, vitality, social functioning, and general mental health. Some questions elicit a “Yes” or “No” answer, others use Likert scales. Lower overall scores indicate greater disability. The SF-12 has good construct and criterion validities and adequate discriminatory power (Ware et al.,

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**Figure 9.** The STRAW+10 staging system for reproductive aging in women – Copyrights obtained.
It has acceptable to good test-retest reliability (.89 for physical health and .76 for mental health). Cronbach’s alpha in a previous RMHRS study was .89 for SF-12\text{Physical} and .84 for SF012\text{Mental} (Bryant, Bei, et al., 2012); in this study, they were respectively .84 and .88.

Measures of vasomotor symptoms appraisal

**Frequency**

To determine vasomotor symptoms frequency, participants were asked to indicate on average how often they experienced hot flushes as well as night sweats, presently and/or in the past. They were given the choice to provide a number per day, week or month; week and month frequencies were then transformed into equivalent daily values.

**Bothersomeness: Hot Flush Rating Scale (HFRS)**

Hunter and Liao (1995) devised a 7-item scale to measure the frequency, severity and extent to which vasomotor symptoms were problematic. This research used the five items relating to bothersomeness of hot flushes/night sweats. The five items concern perceived problems relating to VMS, feelings, interference with daily routine, control and ability to cope. A sample of question is “How distressed do you feel about your hot flushes?”. Participants respond on 10-point Likert scale where 0 = Not at all and 10 = Very much. A general score of bothersomeness is obtained by summing all the scores, with higher scores indicating more difficulty in experiencing VMS. The scale was found to have good test-retest reliability at two-week interval of .82 in a sample of women aged 35 to 71 years old (Hunter & Liao, 1995). Other psychometric properties are not available. In this study, the scale internal consistency was .82.

**Interference: Hot Flush Related Daily Interference Scale (HFRDI)**

The Hot Flush Related Daily Interference Scale was used to evaluate the degree of interference to daily life due to vasomotor symptoms. The scale was developed by Carpenter (2001), and it measures interference on 10 daily activities and general life domains (work, social and leisure activities, sleep, mood, concentration, relaxation with others, sexuality, enjoyment of life and overall quality of life). Participants indicate how much their hot flushes have interfered on each item on a scale from 0 to 10, where 0 indicates do not interfere and 10 completely interfere. A mean score of all items is computed and a high average score indicates greater perceived interference on daily life. Internal consistencies have been found
to be high for this scale, i.e., .93 (Carpenter, 2001) and .94 (Carpenter & Rand, 2008). This research yielded a Cronbach’s alpha of .95.

**Measures of menopausal representations**

**Cognitive representations: Menopause Representations Questionnaire (MRQ)**

The cognitive menopausal representation was assessed with the Menopause Representations Questionnaire (MRQ). The MRQ is a 37-item survey developed by Hunter and O’Dea (2001) in a sample of 80 women aged from 49 to 56 years old. It is based on Leventhal’s Self-Regulation Model and informed by the Illness Perception Questionnaire (IPQ; Weinman et al., 1996), a scale that has been used for a large range of specific illnesses (Hagger & Orbell, 2003). The MRQ contains four of the original IPQ subscales: Identity, Timeline, Consequences and Control/Cure (the subscale Cause was excluded as the cause for the menopause has been found to be a difficult or irrelevant concept for menopausal women (Hunter & O’Dea, 2001). The scale is in two parts. The first part comprises the Identity subscale and has 20 items, which are symptoms possibly experienced by menopausal women (e.g., sleep difficulties, irregular period, hot flushes, vaginal dryness, etc.). Women are asked if they believe any of those symptoms are part of their menopause by answering “Yes”, “Uncertain” or “No”. The second part has 17 items: nine for Consequences, four for Timeline and four for Control/cure. It is anchored on a five-point Likert scale from 1 (strongly agree) to 5 (strongly disagree); it includes questions such as “I feel less confident since the menopause”. Concurrent validity with the Women’s Health Questionnaire and medical help-seeking was established by the authors of the scale. Test-retest at 2-4 weeks interval ranged from .54 to .92, while internal consistencies varied from Cronbach’s alpha .60 to .79. In the current study, estimates were .65 for Timeline, .70 for Consequences, .79 for Control/Cure, and .89 for the aggregated cognitive representation.

**Emotional representations: Adaptation of the Illness Perception Questionnaire (IPQ)**

For the emotional representation, the author directly modelled six questions on the Illness Perception Questionnaire (IPQ) emotional representation questions (Weinman et al., 1996). Using the same five-point Likert scale as the MRQ, it contained questions such as “My menopause makes me feel anxious”. As this is a new approach for the menopause, psychometric data were unavailable. In this research, this subscale yielded an internal consistency coefficient alpha of .90.
Measures of behavioural coping

Hot Flush Behaviour Scale (HFBehS)

The HFBehS measures behaviour in response to hot flushes and night sweats. It was developed by Hunter, Ayers and Smith (2011) using a community sample of 140 women (mean age = 53 years old) who experienced vasomotor symptoms. It has 16 statement items and is scored along three subscales: behavioural avoidance (e.g., “I don’t use public transport because I have hot flushes”), practical cooling behaviours (e.g., “I carry things with me (fans, drinks, wet wipes) in case I have a hot flush”), and positive behavioural strategies (e.g., “I use humour to deal with hot flushes”). Participants respond to the statements using a Likert-scale from 0 (Strongly disagree) to 5 (Strongly agree). Data on psychometric properties are limited and only available from the initial scale development study. Concurrent validity was demonstrated using measures of HF/NS problem rating, frequency, and beliefs. The original study yielded a satisfactory internal consistency of Cronbach’s alpha ranging from .59 to .76 (Hunter et al., 2011). This study produced similar coefficients: .57 for cooling strategies, .62 for positive strategies and .71 for Avoidance.

Measures of emotional and cognitive factors

Anxiety sensitivity: Anxiety Sensitivity Index-3

The ASI-3 measures participants’ fear of anxiety-related sensations based on beliefs that these sensations may be harmful. The ASI-3 was developed by Taylor and colleagues (2007) in response to the lack of multidimensionality of the previous Anxiety Sensitivity Index (ASI). Thus, the new scale has three dimensions: physical, cognitive, and social concerns, but Bernstein et al. (2010) suggested that the physical and cognitive factors were most suitable to represent the construct of anxiety sensitivity. The ASI-3 has 18 items, including statement such as “I worry that other people will notice my anxiety” or “When my throat feels tight, I worry that I could choke to death”. Participants indicate how much on a 5-point Likert scale where 0 = Very little and 4 = Very much. A higher score on the overall scale demonstrates a higher rating of anxiety. Factorial validity of the scale was supported by confirmatory factor analyses on large nonclinical samples (N = 4,494; Taylor et al., 2007). Convergent, discriminant, and criterion-related validities have also been demonstrated (Taylor et al., 2007). Internal consistencies have ranged from Cronbach’s alpha .87 (Pickett, Lodis, Parkhill, & Orcutt, 2012) to .91 (Taylor et al., 2007); in the current study, this was .93.
General catastrophic thinking: Catastrophic Cognition Questionnaire Modified (CCQ-M)

The CCQ-M (Khawaja, Oei, & Baglioni, 1994) assesses how dangerously a person perceives his/her unpleasant emotions, physical changes or thinking difficulties may be. Participants are requested to rate the extent to which they believe 21 different experiences may be dangerous (e.g., being attacked, losing memory, having a stroke, etc.). Responses are given on a 5-point Likert scale anchored at 1 = Not at all dangerous and 5 = Very dangerous. Three separate scores can be calculated representing the three dimensions of the measure (emotional, physical and mental catastrophes) or an overall score can be summed up to indicate overall catastrophising; higher scores indicate a greater tendency to catastrophise. The CCQ-M has been found to have good concurrent and discriminant validities by the developers of the scale. Test-retest reliability has been weak over a two week period (r = .63), but internal consistencies have been good, with Cronbach’s alpha of .83, .85, and .89 for the physical, emotional and mental dimensions respectively (Khawaja et al., 1994). This current study yielded Cronbach’s alpha of .94 for the overall scale.

Hot flush related catastrophic thinking: Catastrophic Thought Questionnaire for Hot Flushes

The assessment of highly negative interpretations of hot flushes was made using the Catastrophic Thought Questionnaire (CTQ) for Hot Flushes, a scale developed by Reynolds (2000) using a community sample of women aged 39-65 years old. It is based on the Rosenstiel–Keefe Catastrophising Subscale of the Coping Strategies Questionnaire and on qualitative data gathered during a pilot survey carried out by Reynolds (2000). Participants respond on a 0 (Never) to 5 (Very frequently) Likert scale to 15 statements such as “It is awful and I feel that it overwhelms me” when thinking about a hot flush. Higher summed scores indicate higher catastrophising, with scores ranging from 0-70. One year test-retest reliability was acceptable at .61. Further psychometric data have not been made available and, to the current study author’s knowledge, the questionnaire has not been used in other research. In this research, Cronbach’s alpha for internal consistency was excellent at .95.
General control beliefs: Pearlin Mastery Scale

The current study used the Pearlin Mastery Scale (Pearlin & Schooler, 1978) to evaluate the degree in which participants generally felt they had control over life outcomes. The scale consists in five negative and two reverse coded positive statement items, with responses anchored on a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree). A typical statement is “Sometimes, I feel that I’m being pushed around in life”. Scores can range from 5 to 35, with the highest scores indicating the highest sense of control. The scale has good construct validity (Pearlin, Lieberman, Menaghan, & Mullan, 1981) and internal consistencies have been reported to range from .64 (Pearlin et al., 1981) to .77 (Marshall & Lang, 1990); in this study Cronbach’s alpha was .85.

Hot flush related control beliefs: Perceived Control Over Hot Flush Index (PCI)

Based on the Arthritis Helplessness Index (Nicassio, Wallston, Callahan, Herbert, & Pincus, 1985), this scale was developed by Reynolds (1997a) using a community sample (age range 39-65 years-old) to investigate the association between perceived control of hot flushes and distress. It contains 15 items, 9 referring to positive control (e.g., “I can do a lot of things myself to cope with my hot flushes”) and 6 to negative control (e.g., “Hot flushes are controlling my life”). Participants respond on a 4-point Likert scale from 1 (Strongly disagree) to 4 (Strongly agree). Negative items are reversed, and total scores indicate more control. The PCI has been found to have good psychometric properties, including good construct and discriminant validities (Pimenta, Leal, & Maroco, 2012; Reynolds, 1997a). Internal consistencies have varied from Cronbach’s alpha .65 to .78 in previous research (Carpenter et al., 2012; Pimenta et al., 2011a) and, similarly, it was found to be .72 in this study.

Depressive symptoms: Center for Epidemiologic Studies Depression Scale (CES-D)

The CES-D (Radloff, 1977) is a widely used first-stage screening measure of depression that evaluates depressive symptoms over the past week. It comprises 20 items relating to the emotional (e.g., “I felt sad”), cognitive (e.g., “I had trouble keeping my mind on what I was doing”) and behavioural (e.g., “I did not feel like eating: my appetite was poor”) aspects of depression. Each item is scored on a Likert rating scale from 0 (‘Rarely or none of the time’) to 3 (‘Most or all of the time’), with a total score ranging from 0 (no depressive symptomatology) to 60 (highest depressive complaints). The scale was developed for and has been widely used within the general population. It has good construct validity (Hann, Winter, & Jacobsen, 1999), reasonable convergent validity (Radloff, 1977), but may not discriminate
effectively with anxiety measures (Breslau, 1985; Orme, Reis, & Herz, 1986). The scale has a moderate test-retest reliability of .59 (at eight weeks interval), and an estimated internal consistency of coefficient alpha .85 for a general healthy population (Radloff, 1977) and .88 for a community sample of middle age women (Knight, Williams, McGee, & Olaman, 1997). In this study, the coefficient Cronbach’s alpha was .94.

**Negative affect: Positive and Negative Affect Schedule (PANAS)**

The PANAS, developed by Watson, Clark and Tellegen (1988), is a widely used measure of affect, which has been cited over 19,000 times. It consists of two 10-item subscales measuring positive and negative affect. Participants rate the degree to which they experience Positive Affect defined by adjectives such as “Enthusiastic”, “Inspired”, “Determined”, and Negative Affect defined, for example, as “Hostile”, “Irritable”, “Ashamed”. This study only used the Negative Affect subscale. Items are rated on a Likert scale anchored as 1 = *Very slightly or not at all* and 5 = *Extremely*. The author of the scale offers the flexibility for researchers to set their own timeline, and this was set as “Over the past week” in this study. The construct validity for the PANAS is well established (Crawford & Henry, 2004; Watson et al., 1988), and the internal consistency for the Negative Affect is excellent. For instance, it was found to be .85 in a non-clinical sample (Crawford & Henry, 2004); in this study, internal consistency was .89.

**Body consciousness: Objective Body Consciousness (OBC) scale**

The Objective Body Consciousness scale was developed by McKinley and Hyde (1996) from a feminist perspective as a measure of social construction of the female body. It contains three subscales, each with eight items: Body Shame, Body Surveillance, and Body Control. Body Shame refers to the shame felt when women perceived their body as not culturally conforming; it includes items such as “I feel ashamed of myself when I haven’t made the effort to look my best”. Body Surveillance assesses how women view their body from an outsider viewpoint, that is how they are concerned about how their body looks rather than feels. An item example is “I rarely compare how I look with how other people look”. These two scales were retained for this study, however the third scale, Body Control, was excluded as it focuses on control beliefs about one’s physical appearance (i.e., prettiness or weight). The OBC is anchored on a 6 point Likert scale ranging from 1 for *Strongly Agree* to 7 for *Strongly Disagree* (the original scale option to choose “Not Applicable” was removed.
for the purpose of this study in order to reduce missing data). A higher score indicates a higher level of body consciousness on each subscale.

The OBC was originally developed in both young and middle age female samples and has been used several times since in research in that population (Derhy-Snijders, 2007; McKinley, 2006) as well as in menopause studies (McKinley & Lyon, 2008; Rubinstein & Foster, 2013). Factor analyses found that the OBC had sound construct validity, and Body Shame and Body Surveillance had a good divergent validity with the Body Esteem Scale, respectively $r = -.51$ and $r = -.39$ (McKinley & Hyde, 1996). Internal consistency for a middle-age female sample was .76 for Body Surveillance and .70 for Body Shame (McKinley & Hyde, 1996), while test-retest reliability was .79 for each subscale at a two-week interval (McKinley & Hyde, 1996). This study yielded alpha coefficients of .79 for Body Surveillance and .78 for Body Shame; it was .83 for the two subscales combined.

**Perceived stress: Perceived Stress Scale-10 (PSS-10)**

The PSS-10 (Cohen, 1988; Cohen et al., 1983) is a widely used short scale that measures perceived stress over the past month by assessing how unpredictable, uncontrollable, and overloaded participants find their lives. The scale has 10 general statements such as “How often have you found that you could not cope with all the things that you had to do?” and “How often have you felt nervous and "stressed"?” Responses are given on a 5-point Likert scale, where 1 indicates Never and 5 indicates Very often. An overall score is obtained by reversing responses to four positively stated items (4, 5, 7, & 8) and adding scores across all items; the higher the overall score, the higher the perceived stress. Psychometric norms provided by the authors of the scale suggest that it has good construct and concurrent validities. Internal consistency was good in the community sample used during the original scale development at Cronbach’s alpha .86; in this study, it was .90.
Procedure

Ethical considerations

The research received ethical approval from the Behavioural and Social Sciences Human Ethics Sub-Committee of the University of Melbourne on 12\textsuperscript{th} November 2012 (see Appendix B). It did not involve participants from a vulnerable population and it was not anticipated that the questionnaire would cause any psychological distress. However, participants scoring 24 and over on the Center for Epidemiologic Studies Depression Scale, indicating possible clinical concern (Lesman-Leegte et al., 2009), were contacted by the research team clinical psychologist to discuss treatment options, if required.

In the first wave of data collection (see below for details about data collection procedure), it was found that several participants did not write an exact number for the amount of hot flushes and night sweats they experienced, but rather used general comments such as “A lot”, “Frequently”, “Often”. Due to the importance of obtaining quantifiable data about vasomotor symptoms, a minor amendment to the questionnaire was made to include the following sentence on page 15 of the questionnaire: “\textit{(Please ensure to write down a number in the following questions, even if it is approximate, thank you)}”. This amendment was accepted by the Ethics Sub-Committee on 1\textsuperscript{st} May 2013.

Sample frame

The sampling frame was established 10 years prior to the current study, for which data was collected between March and August 2013. Due to this long timeframe, it was anticipated that some of the data had become out-of-date. To decrease the rate of return-to-sender mail, a revision of participants’ addresses was performed against the current electoral roll at the beginning of the research. Despite ongoing RMHRS studies targeting specific subsamples, it was anticipated that research fatigue would have taken place. By offering a relevant survey topic to the participants, a factor found to increase response rate (Edwards et al., 2007), we hoped to offset research fatigue.
Questionnaire mail out

Each questionnaire was coded prior to being sent following the same coding system used in previous research (Murray et al., 2004). This allowed for records to be updated in the main RMHRS database as well as providing longitudinal data for current and future studies. This coding also enabled the matching of participants with their contact details for those who may have decided to opt out of the study after providing consent, and to allow participants with high levels of depressive symptomatology to be contacted by the team clinical psychologist (see Ethical considerations).

The research involved sending all participants a research pack (first wave) containing a plain language statement (Appendix C), an informed consent form (Appendix D), one questionnaire (Appendix E, and Appendix F for amendment) and a reply-paid return envelope. Participants who agreed to take part were asked to return the questionnaire and signed consent form in the envelope. Participants were invited to update their contact details for future research. The consent form also gave them an option to opt out from future studies. Data received from this mail-out were then processed. In order to increase return rate, a follow-up mail-out was organised (second wave) and participants who had not responded were again sent a new copy of the questionnaire along with a cover letter (Appendix G) and another consent form.

Response rates

A total of 1,644 research packs were sent in the first wave of data collection. Three hundred and seventy-nine completed questionnaires were returned, four women declined to participate, four were outside the age range, and 160 unopened envelopes were returned to sender. This corresponds to a 23.1% response rate. The response rate was improved with the second wave of data collection to 31.4%, with further 138 valid questionnaires received, making a total of 517 questionnaires returned.

Data preparation and specification for the analyses are presented in the following chapter, whilst the data analyses are presented in Chapter 8.
CHAPTER 7
DATA PREPARATION AND SPECIFICATION OF ANALYSES

Chapter overview

This chapter describes the data preparation carried out prior to conducting the analyses reported in the next chapter. It contains, in order, sections on missing data, outliers, scale transformation of the Menopause Representations Questionnaire (MRQ), data distribution (skewness and kurtosis), multicollinearity, the type of analyses used for the study, effect sizes and model fit indices. It concludes with a clarification about the different samples used in the analyses and power analyses. The latter is particularly important because a sufficient sample size is necessary to ensure adequate power to detect statistical significance. As such, a number of parameters are considered in the power analyses: the $p$-value (set at .05), the power (set between .80 and .90), the detectable effect size (at least at medium size), and the magnitude of the alternative hypothesis (i.e. one-tailed or two-tailed).

Missing data

In survey analyses, the retention of data is important for maintaining adequate sample size and achieving statistical power, thus replacement of missing data rather than deletion is preferable when it is appropriate (Downey & King, 1998). In this study, there were low levels of missing data. No missing data pattern was observed, suggesting data was missing at random. Therefore, a valid mean substitution method was used to impute missing values when two items or fewer were missing on a scale. Valid mean substitution consists in replacing the missing item with the case mean for the relevant subscale (Raymond, 1986). One advantage of using valid mean substitution is that it offers a good representation of the original data when the number of missing items is 20% or less (Downey & King, 1998). Valid mean substitution also performs better than other commonly used method, such as the multiple regression replacement (MRR), in estimating parameters for survey based research (Downey & King, 1998). Any participants who had missed more than two items on any scale were removed from the analyses as the scale was deemed incomplete. Table 1 presents the number of participants who were removed or retained.
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<th>More than 2 items missing&lt;sup&gt;2&lt;/sup&gt;</th>
<th>% of deleted data</th>
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</tr>
</tbody>
</table>

<sup>1</sup> Participant’s data retained  
<sup>2</sup> Participant’s data deleted

Notes: HFRS = Hot Flush Rating Scale, HFRDI = Hot Flush Related Daily Interference Scale, MRQ = Menopause Representations Questionnaire, HFBehS = Hot Flush Behaviour Scale, ASI-3 = Anxiety Sensitivity Index-3, CCQ-M = Catastrophic Cognition Questionnaire Modified, CTQHF = Catastrophic Thought Questionnaire for Hot Flushes, PMS = Pearlin Mastery Scale, PCI = Perceived Control Over Hot Flush Index, CES-D = Center for Epidemiologic Studies Depression Scale, PANAS = Positive and Negative Affect Schedule, OBC = Objective Body Consciousness, PSS-10 = Perceived-Stress Scale, SF-12 = Short-Form Health Survey
Outliers

The removal of extreme low- and high-score outliers is important for correlational and regression analyses as their presence may increase the probability of Type I and Type II errors (Osborne & Overbay, 2004; Osborne & Waters, 2002). The detection of outlying values was therefore carried out using the Tukey’s outlier labelling technique, which is applicable to skewed or non-skewed shaped data, since it makes no distributional assumptions (Seo, 2002). Unlike other techniques, this procedure does not use sample means or standard variances but consists in identifying upper and lower bound values using the 25th (Q1) and 75th (Q3) percentiles of the data spread. Values on these percentiles are then imputed in Tukey’s outlier labelling formula as follows: Upper bound = Q3 + (x * (Q3 - Q1)) and Lower bound = Q1 - (x * (Q3-Q1)) (Tukey, 1977). Following Hoaglin and Iglewicz (1987)’s paper on fine tuning Tukey’s formula, a value of 2.2 was used as the constant x to determine the inter quartile ranges.

Using this method, five scales were found to have outliers: the SF-12 Physical Health (seven cases), Holmes and Rae Stress Scale (29 cases), CES-D (two cases), Hot Flushes Catastrophic Thought Scale (13 cases), and the Avoidance subscale of HotFlushes Behaviour Scale (one case). Except for the SF-12 Physical Health, all those scales tended to have positive skewness, although within acceptable norms, as described above. A thorough check was performed to determine for each case if data should be removed or retained. None of the outliers was found to be entered due to typographical, measurement or contamination errors, and therefore did not require trimming on these grounds. A decision was made to retain all data from the SF-12 Physical Health, HRSS and HFCTS as the values were deemed to be legitimate and representative of the sample. Winsorization (Dixon & Yuen, 1974) was chosen as the appropriate technique to deal with the outliers of the CES-D and HFBS. Winsorization consists in replacing the lowest and highest observations by the values of their nearest neighbours that are not outliers and is an appropriate procedure to use in heavy-tailed distribution when very few outliers are detected (i.e. less than 5%). Therefore, the two outlier scores in the CES-D (54 and 57) were replaced by the score of 49, and the outlier score of the HFBS (23) was replaced with the score of 18.
Scale transformations of the MRQ

For the descriptive analyses, the Menopause Representations Questionnaire (MRQ) was used in an unaltered form to allow comparisons with previous research. However, the MRQ was transformed to allow aggregations of scores for all the inferential analyses.

First, a value was attributed to the symptoms reported in the Identity subscale; this attribution was made in accordance with a method previously highlighted by Smith and colleagues (2011): symptoms positively identified as being part of the menopause (i.e., when participants ticked YES) were given a value of 2, symptoms identified as UNCERTAIN, were given a value of 1, and symptoms not identified as part of the menopause were given a value of 0. The number of YES (value of 2) and UNCERTAIN (value of 1) scores were then added to form the Identity subscale.

Second, the scores on all subscales (Identity, Consequence, Timeline and Control/cure) of the Menopause Representation Questionnaire were standardised so that the subscales could be aggregated into a Cognitive MR subscale. Such standardisation allows for aggregation of scores into an overall score as the mean for each scale is given a value of zero while the location of any individual score relative to others remains unchanged in the distribution. The emotional representation scale was also standardised (Emotional MR), and Cognitive MR and Emotional MR were then combined to form a Menopause Representations (Total MR).

Data distribution

In order to check for normal distribution and peakedness of scores, skewness and kurtosis were explored prior to the analyses being conducted. Except for the vasomotor symptoms variables, which were highly positively skewed, the skewness value for all variables was within the acceptable range of -2 and + 2 as proposed by West, Finch and Curran (1995). The analyses for kurtosis also showed that kurtosis for all variables was within the acceptable values of -7 and + 7 (West et al., 1995), except again for the vasomotor symptoms, which showed leptokurtic distributions. As suggested by Howell (2007) for substantial abnormal distributions, a logarithmic transformation (Log10) was performed on the VMS variables and this successfully reduced both skewness and kurtosis to within acceptable ranges.
Multicollinearity

Multicollinearity exists when a predictor is moderately or highly correlated with other predictors in a regression model. Severe multicollinearity may lead to unstable coefficient estimates that are difficult to interpret. The variance inflation factor (VIF) is an accepted measure of severity of multicollinearity and whilst there is no universally agreement on the subject, various VIF cut-off points have been proposed, ranging from a conservative 2.5 (Allison, 1999) to a tolerant 10 (Belsley, Kuh, & Welsch, 1980). This research has selected a cut-off value of 5 as a sensitive compromise, as proposed by Kutner, Nachtsheim and Neter (2004) and O’Brien (2007). Multicollinearity analyses were conducted for all main and control variables, and the VIF was found to be smaller than 3.5 across all predictors, with the majority being between 1 and 2. One exception to this was for the frequency of past hot flushes that yielded a VIF of 4.31 with several other variables. Therefore, multicollinearity was not deemed to present a significant problem in this study.

Study analyses, effect sizes and model fit indices

The study used several statistical analyses, including correlations, ANOVA, and path analysis for multiple regressions, mediations and model testings. All analyses were performed using SPSS v22 and AMOS v22.

Correlation analyses were computed for Question 2, \( H_2 \), \( H_{10} \) and \( H_{11} \). Pearson’s \( r \) was used as a correlation coefficient and Cohen’s \( r^2 \) for effect size estimates.

One-way between-subjects ANOVA analyses were conducted for \( H_1 \). Due to the sizes of the groups compared being unequal, Tukey-Kramer test was selected for post-hoc analyses because it is more appropriate to use with different size samples (Hayter, 1984). Cohen \( \eta^2 \) was used as a measure of effect size.

\( H_3 \) and \( H_4 \) were tested using standard multiple regressions, which assess the relationships between several independent variables (IV, or exogenous variables) and one or several dependent variables (DV, or endogenous variables). AMOS software permits the
computation of several endogenous variables and was used for the study multiple regressions. Both unstandardised ($B$) and standardised (Beta or $\beta$) coefficients can be reported. This study, however, will use standardised estimates $\beta$ because it seeks to compare effects obtained with non-identical measures and, in standardized analyses, all variables are converted to a common metric, i.e., standard-deviation (z-score) units, so the magnitude of the $\beta$ estimates can be meaningfully compared.

The coefficient of multiple determination ($R^2$) and the adjusted coefficient of multiple determination ($R_{adj}^2$) can both be used for measures of effect size in multiple regressions, but the former is limited because it is somewhat inflated by variation caused by sampling error which, in turn, is related to the sample size and number of predictors (Ellis, 2010). Whilst $R_{adj}^2$ is a more accurate index because it is adjusted for the number of predictors and sample size, this study will report both $R^2$ and $R_{adj}^2$. This study used Cohen’s $R^2$ cut-off values for determining effect sizes. Table 2 presents the effect size classes for Cohen’s $r^2$, $\eta^2$ and $R^2$.

Table 2

<table>
<thead>
<tr>
<th>Test</th>
<th>Relevant effect size</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation</td>
<td>$r$</td>
<td>.10</td>
<td>.30</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>$r^2$</td>
<td>.01</td>
<td>.09</td>
<td>.25</td>
</tr>
<tr>
<td>ANOVA</td>
<td>$\eta^2$</td>
<td>.01</td>
<td>.06</td>
<td>.14</td>
</tr>
<tr>
<td>Mediation</td>
<td>$R^2$</td>
<td>.02</td>
<td>.13</td>
<td>.26</td>
</tr>
<tr>
<td>Multiple regression</td>
<td>$R^2$</td>
<td>.02</td>
<td>.13</td>
<td>.26</td>
</tr>
</tbody>
</table>

*Note: Adapted from Ellis (2010)*

Mediation analyses were conducted for $H_5$, $H_9$ and $H_{12}$. As recommended for small samples (Preacher & Hayes, 2004), bootstrapping analyses were used to test all meditational models. Bootstrapping was set for 10,000 bootstrapped samples and a 95% bias corrected confidence interval. As such, indirect effects are significantly different from zero at $p < .05$ (two tailed) when zero is not in the 95% confidence interval. $R^2$ is an acceptable effect-size measure for mediations (Fairchild, MacKinnon, Taborga, & Taylor, 2009), and therefore will be used
for the study mediation analyses. Model fit indices for the mediation models will also be reported in Appendix H.

Four model testings were conducted and included the following variables: 1) menopausal representation and appraisal of VMS (i.e., $H_6$, $H_7$ and $H_8$), 2) cognitive/emotional factors, menopausal representation and appraisal of VMS, 3) menopausal representation, appraisal of VMS, and coping strategies, 4) cognitive/emotional factors, menopausal representation, appraisal of VMS and coping strategies. The assessment of the accuracy of the models was obtained from a number of fit indices. Brown (2015) suggests that at least three types of fit indices should be used: absolute (e.g. chi square), parsimony (e.g. RMSEA) and comparative (e.g. CFI/TLI). The model fit indices selected for this study are presented in Table 3.

**Sample sizes and power analyses**

Four different samples were used for the analyses. The sample used for Question 2 (relating to whether the menopausal cognitive and emotional representations were independent, or intercorrelated) comprised participants who had completed the Menopause Representations Questionnaire ($n = 387$). The same sample was used for the $H_1$ (relating to differences in MR across menopausal stages) but, as three participants did not indicate their menopausal status, $n = 384$. For $H_2$ (relating to general and specific catastrophic thinking and control beliefs), the sample comprised participants who responded to the relevant questionnaires (i.e., the CCQ-M, the CTQHF, the PMS and the PCI), $n = 320$. For the rest of the analyses, only participants who experienced VMS at the time of responding and completed the MRQ were selected ($n = 171$).
### Table 3
**Model Fit Indices and Cut-off Values**

<table>
<thead>
<tr>
<th>Indices</th>
<th>Interpretation</th>
<th>Suggested cut-off values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi square ($\chi^2$) and probability level $p$</td>
<td>The chi-squared test is the most commonly reported index and indicates the difference between observed and expected covariance matrices.</td>
<td>A significant $p$ value associated with $\chi^2$ indicates lack of satisfactory model fit. $\chi^2$ values closer to zero indicate a better fit whilst the higher the $p$ value, the better the fit.</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>The CFI compares the fit of a target model (proposed model) to the fit of an independent model (null model)</td>
<td>&gt; .90 Acceptable fit  &gt; .95 Good fit</td>
</tr>
<tr>
<td>Tucker Lewis Index (TLI)</td>
<td>The TLI compares a proposed model’s fit to a null model but also measures parsimony by comparing the degrees of freedom of the proposed and the null models; it is relatively independent of sample size.</td>
<td>&gt; .90 Acceptable fit  &gt; .95 Good fit</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA)</td>
<td>Based on the RMSEA analyses the discrepancy between the proposed model, with unknown but optimally chosen parameter estimates, and the population covariance matrix</td>
<td>$\leq .05$ Good fit &gt;.05 &lt; .08 Moderate fit &gt;.1 Inadequate fit</td>
</tr>
<tr>
<td>RMSEA Confidence Interval (CI)</td>
<td>Ideally, the lower value of the 90% confidence interval includes or is very near zero (or no worse than 0.05) and the upper value is not very large, i.e., less than .08.</td>
<td></td>
</tr>
<tr>
<td>Akaike Information Criterion (AIC) $^1$</td>
<td>This index is used to compare different models, and, like $\chi^2$, the AIC represents the extent to which the observed and predicted covariance matrices differ from each other. Only the AIC value of one model relative to the AIC value of another model is meaningful.</td>
<td>When comparing two models, the model with the lowest AIC value is optimal, i.e., the absolute AIC value is irrelevant</td>
</tr>
</tbody>
</table>


$^1$ The AIC index was only used for the comparison of models in Aim 2.
The software G*Power (version 3.1.9.2) developed by Faul, Erdfelder, Lang and Buchner (2007) was used to determine if the sample size provided sufficient power to detect an effect, and the detectable size of the effect. Table 4 displays the sample sizes needed in the correlations, ANOVA and multiple regressions analyses to detect a medium effect size, the actual sample used in the analysis and corresponding actual effect size. For the power analyses, the power level error probability (1 – β) was set at .90, whilst the α error probability was set at .05. Table 4 shows that for each hypothesis, there were sufficient participants to detect at least a medium effect size, and in many cases, the actual effect size detectable was smaller.

For mediation analyses, Fritz and MacKinnon (Fritz & MacKinnon, 2007) have suggested sample sizes for six tests of mediation, including bias-corrected bootstrapping analyses, and suggested that, for a power of .80, a sample size equal to 71 is enough to detect medium size effects. In this study, the size of the sample used in the mediation analyses (H5, H9 and H12) was 171, thus providing ample power to detect such an effect.

For the path analyses, an ideal sample is 200, however smaller sample sizes are acceptable for models with no latent variables or when correlations between exogenous variables are strong (Kenny, 2014). Furthermore, a ratio n:q, where q is the number of model variables, comprised between 10 as a minimum and 20 as ideal, has been proposed (Kline, 2011). For Aim 2, the initial cognitive model of VMS includes 11 variables, thus n:q = 15.5, and for Aim 3, the final integrative cognitive-behavioural model has 14 variables (i.e., 11 variables from Aim 2 initial model plus three coping strategy variables), thus n:q = 12.2. These ratios being both above 10 highlight that the models’ sample size of 171 is sufficient to compute the path analyses.
Table 4

Estimates of Sample Sizes Needed for .90 Power

<table>
<thead>
<tr>
<th>Questions/ Hypotheses</th>
<th>Test</th>
<th>Parameters</th>
<th>Relevant effect size</th>
<th>Cohen's medium effect size</th>
<th>Sample size needed to detect a medium effect size</th>
<th>Research actual sample size</th>
<th>Power achieved with actual sample size</th>
<th>Effect size detectable with actual sample size</th>
<th>Type of effect size detectable²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 2</td>
<td>Correlations³</td>
<td>2 variables</td>
<td>$r^2$</td>
<td>.09</td>
<td>112</td>
<td>387</td>
<td>.99</td>
<td>.027</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_1$</td>
<td>ANOVA</td>
<td>3 groups</td>
<td>$η^2$</td>
<td>.25</td>
<td>207</td>
<td>384</td>
<td>.99</td>
<td>.182</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_2$</td>
<td>Correlations⁴</td>
<td>2 variables</td>
<td>$r^2$</td>
<td>.09</td>
<td>92</td>
<td>320</td>
<td>.99</td>
<td>.027</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_3$</td>
<td>Regressions</td>
<td>5 predictors</td>
<td>$R^2$</td>
<td>.13</td>
<td>118</td>
<td>171</td>
<td>.98</td>
<td>.106</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_4$</td>
<td>Regressions</td>
<td>1 predictor</td>
<td>$R^2$</td>
<td>.13</td>
<td>77</td>
<td>171</td>
<td>.99</td>
<td>.070</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_5$</td>
<td>Regressions</td>
<td>1 predictor</td>
<td>$R^2$</td>
<td>.13</td>
<td>77</td>
<td>171</td>
<td>.99</td>
<td>.070</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_7$</td>
<td>Regressions</td>
<td>1 predictor</td>
<td>$R^2$</td>
<td>.13</td>
<td>77</td>
<td>171</td>
<td>.99</td>
<td>.070</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_8$</td>
<td>Regressions</td>
<td>2 predictors</td>
<td>$R^2$</td>
<td>.13</td>
<td>92</td>
<td>171</td>
<td>.99</td>
<td>.083</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_{10}$</td>
<td>Correlations⁴</td>
<td>2 variables</td>
<td>$r^2$</td>
<td>.09</td>
<td>92</td>
<td>171</td>
<td>.99</td>
<td>.049</td>
<td>Small to medium</td>
</tr>
<tr>
<td>$H_{11}$</td>
<td>Correlations⁴</td>
<td>2 variables</td>
<td>$r^2$</td>
<td>.09</td>
<td>92</td>
<td>171</td>
<td>.99</td>
<td>.049</td>
<td>Small to medium</td>
</tr>
</tbody>
</table>

*Note: the power level error probability (1 - β) was set at .90, whilst the α error probability was set at .05

¹ based on medium effect sizes

² refer to Table 2 for classes of effect sizes

³ Two-tailed

⁴ One-tailed
Conclusion

First, this chapter presented the preparations undertaken ahead of the statistical analyses. In the process of preparing the data, missing items were found in almost all the scales, as would be expected with such a large amount of data. Most of the missing data occurred at random, and therefore did not present any specific concern. Value mean substitution was used for cases where one or two items were missing. When missing data was above this threshold, the data from the scale was removed from the analyses; this represented a minor proportion of the overall data as shown in Table 1. A low number of outliers were found and, while the majority of those were retained as they were deemed to be accurate representations of the phenomena being measured, only three outliers were amended (two in CES-D scale and one in the HFBS scale) using the Winsorization technique. Skewness and kurtosis were found to be acceptable for all scales, except for VMS frequency, for which a logarithmic transformation was performed. Multicollinearity analyses between the study variables were conducted, and showed that this issue was not of concern.

In the second part of this chapter, analyses performed to test the hypotheses were presented; they included correlations, one-way between-subjects ANOVA, mediations, and path analyses (standard multiple regressions and model testings). The relevant effect sizes considered in this study were presented along with each type of analyses. The chapter concluded with a section on sample sizes and power analyses. Table 4, which included correlations, ANOVA and multiple regression power analyses, showed that the different samples available for testing the hypotheses were large enough to provide ample power (.98 and above) to detect medium effects. With such power, it is anticipated that small to medium effects should be detected. Whilst the determination of power is more complex for mediation and path analyses, published guidelines indicated that, again, the sample \((n = 171)\) was large enough to detect at least medium effects.
CHAPTER 8

RESULTS

Chapter overview

This chapter presents both the descriptive and statistical results of the study. For ease of reading, it mostly follows the outline of Chapter 5, Aims and Hypotheses. It is divided into five sections. The first section, i.e., Descriptive Analyses, provides a profile of the study sample, as well as descriptive statistics for the appraisals of vasomotor symptoms, health data, coping strategies and cognitive/emotional factors. Statistics are provided, as appropriate, for the different sample sizes as outlined in Chapter 7. The second section presents the results for Aim 1, which focused on the menopause representations for middle-age women. It starts with detailed descriptive statistics gathered with the Menopause Representation Questionnaire; this is followed by results regarding the interrelationships between cognitive and emotional representations. Finally, it presents the ANOVA analyses relating to differences in menopausal representations across menopausal stages (hypothesis $H_1$). The third section outlines the results for Aim 2, which related to testing how cognitive/emotional factors interact with the menopause representations and vasomotor symptoms appraisals. This section commences with presenting the results for hypothesis $H_2$, regarding general and VMS-specific cognitions. It then describes the results of seven individual hypotheses on the relationships between cognitive/emotional factors, menopause representations and vasomotor symptom appraisals ($H_3$ to $H_9$).

The findings from these analyses, along with the identification of significant control variables, serve to inform the testing of the first proposed cognitive model of vasomotor symptoms. This model is presented at the end of this section. The fourth section presents the results for Aim 3, i.e., testing how coping interacts with cognitive and emotional factors, the menopause representations and vasomotor symptoms appraisal. The first part of this section presents the correlation matrices for all the study variables, allowing to test the relationships between Avoidance coping and the other study variables ($H_{10}$ and $H_{11}$). Mediation analyses to test if the direct effects between menopausal representations and VMS appraisals would be
stronger than the indirect effects via coping \((H_{12})\) are then presented. This is followed by the testing for best fit of two competing models, which assessed the mediation role of coping in the relationships between menopause representations and VMS appraisal. In conclusion, the fifth section presents the final integrative cognitive-behavioural model of VMS, which incorporates all previous findings. This is followed by the chapter summary.

**Descriptive Analyses**

**Demographics**

The sample demographics revealed the following profile: participants had a mean age of 52.1 years \((SD = 5.49, \text{Mode} = 52)\); the majority were of an Australian background (91.7%), married (77.9%), lived with their partner or husband (81.9%), and had either 2 or 3 children (69.6%). The majority had an apprenticeship/technical training or lower (70.8%), and worked either full-time or part-time (79.1%). On average the sample had a Body Mass Index (BMI) of 28.24 \((SD = 6.35)\), i.e. within the overweight/pre-obese range according to the World Health Organisation (2013; sample range = 16.1 to 60.2; 10.4% missing data). Table 5 summarizes the key demographic variables.

**Descriptive statistics**

**Physical health**

The SF-12 was used to measure physical health and the mean for this scale was 49.12 \((SD = 9.66)\) for the whole sample \((N = 516)\), and 47.95 \((SD = 9.98)\) for the sample used in the model testing \((n = 171)\). These indicate that the sample had slightly better self-reported physical health compared with a study in the United States that surveyed similar age groups (Utah Department of Health, 2001).
### Table 5

**Demographic Characteristics of the Sample**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to year 10</td>
<td>146</td>
<td>28.2%</td>
</tr>
<tr>
<td>Up to year 12</td>
<td>59</td>
<td>11.4%</td>
</tr>
<tr>
<td>Trade/Technical certificate completed</td>
<td>161</td>
<td>31.2%</td>
</tr>
<tr>
<td>Undergraduate degree</td>
<td>87</td>
<td>16.8%</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>51</td>
<td>9.9%</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>1.5%</td>
</tr>
<tr>
<td>Missing data</td>
<td>5</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>474</td>
<td>91.7%</td>
</tr>
<tr>
<td>Indigenous Australian</td>
<td>7</td>
<td>1.4%</td>
</tr>
<tr>
<td>British</td>
<td>12</td>
<td>2.3%</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>3.7%</td>
</tr>
<tr>
<td>Missing data</td>
<td>5</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working full-time</td>
<td>179</td>
<td>34.6%</td>
</tr>
<tr>
<td>Working part-time</td>
<td>230</td>
<td>44.5%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>15</td>
<td>2.9%</td>
</tr>
<tr>
<td>Full-time house duties</td>
<td>44</td>
<td>8.5%</td>
</tr>
<tr>
<td>Retired</td>
<td>24</td>
<td>4.6%</td>
</tr>
<tr>
<td>Disability/sickness benefit</td>
<td>24</td>
<td>4.6%</td>
</tr>
<tr>
<td>Missing data</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Relationship status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>403</td>
<td>77.9%</td>
</tr>
<tr>
<td>Separated/divorced</td>
<td>71</td>
<td>13.7%</td>
</tr>
<tr>
<td>Widowed</td>
<td>19</td>
<td>3.7%</td>
</tr>
<tr>
<td>Single/never married</td>
<td>13</td>
<td>2.5%</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>1.9%</td>
</tr>
<tr>
<td>Missing data</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Living situation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with spouse/partner</td>
<td>214</td>
<td>41.4%</td>
</tr>
<tr>
<td>Living with spouse/partner and children</td>
<td>206</td>
<td>39.8%</td>
</tr>
<tr>
<td>Lone parent</td>
<td>46</td>
<td>8.9%</td>
</tr>
<tr>
<td>Living alone</td>
<td>41</td>
<td>7.9%</td>
</tr>
<tr>
<td>Living with parent(s)</td>
<td>5</td>
<td>1.0%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.8%</td>
</tr>
<tr>
<td>Missing data</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has no children</td>
<td>41</td>
<td>7.9%</td>
</tr>
<tr>
<td>Has at least one child</td>
<td>476</td>
<td>92.1%</td>
</tr>
<tr>
<td><strong>Number of children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>34</td>
<td>7.1%</td>
</tr>
<tr>
<td>2</td>
<td>201</td>
<td>42.2%</td>
</tr>
<tr>
<td>3</td>
<td>159</td>
<td>33.4%</td>
</tr>
<tr>
<td>4</td>
<td>51</td>
<td>10.7%</td>
</tr>
<tr>
<td>5 ≥</td>
<td>29</td>
<td>6.1%</td>
</tr>
<tr>
<td>Missing data</td>
<td>2</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

*N = 517

1 This includes biological, adopted, step and foster children
HRT and other medications

Twenty-four (4.6%) women indicated they were taking Hormone Replacement Therapy medication at the time of responding. Fifty-seven (11%) had been using HRT but were no longer taking it. Antidepressant medication that acts on the serotonin and norepinephrine neurotransmitters were taken by 63 (12.2%) women, and one woman was on Tamixofen treatment, a treatment that has been shown to increase vasomotor symptoms (Loprinzi, Zahasky, Sloan, Novotny, & Quella, 2000). Thirty-two (6.2%) participants were taking oral contraception or had a contraceptive implant.

Menopausal status

The majority of participants were postmenopausal (60.3%). A further analysis of the sample age revealed that 60% of the participants were 52 years old and over, and considering the median age of the menopause in Australia is 51 years (Do et al., 1998), the large postmenopausal group in this study is comparable to previous menopause research. Figure 10 and Table 6 provide further information about the participants’ menopausal status. The vast majority (80.1%) of postmenopausal women had experienced natural menopause. In total, 50 (16.0%) women had a hysterectomy: 27 (8.7%) reported hysterectomy with ovarian conservation, and a further 23 (7.4%) had both a hysterectomy and a bilateral oophorectomy. Ten women (3.2%) had a bilateral oophorectomy alone, indicating that 33 (10.6%) women had a surgical menopause. Two (0.6%) women had a medical menopause.

Figure 10. Menopausal status of participants.
N = 511
Note: Six missing cases or 1.2%
Table 6

Menopausal Status Breakdown According to the STRAW Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular menstrual cycles</td>
<td>94</td>
<td>18.2%</td>
</tr>
<tr>
<td>Subtle changes in cycles</td>
<td>57</td>
<td>11.0%</td>
</tr>
<tr>
<td>Persistent change (1 week)</td>
<td>14</td>
<td>2.7%</td>
</tr>
<tr>
<td>Persistent change (60 days)</td>
<td>34</td>
<td>6.6%</td>
</tr>
<tr>
<td>No menstrual cycle</td>
<td>312</td>
<td>60.3%</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

N = 517

Vasomotor symptoms

Frequency

Across all menopausal stages, 63.1% of participants (n = 326) were experiencing at least one vasomotor symptom at the time of responding; 24.5% of premenopausal women reported currently having hot flushes and/or night sweats; the proportion for perimenopausal women was 68.8% and for postmenopausal 82.1%. Figure 11 shows the percentage of women experiencing hot flushes and night sweats by menopausal status at and prior to the time of data collection. Vasomotor symptom means and standard deviations are presented in Table 7.

![Figure 11](image-url)

*Figure 11.* Percentage of women experiencing past and current vasomotor symptoms by menopausal status.
Table 7

Means and Standard Deviations of Daily Frequency of Vasomotor Symptoms

<table>
<thead>
<tr>
<th>Vasomotor symptoms</th>
<th>Across all status</th>
<th>Premenopause</th>
<th>Perimenopause</th>
<th>Postmenopause</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD) n = 326</td>
<td>M (SD) n = 171</td>
<td>M (SD) n = 326</td>
<td>M (SD) n = 171</td>
</tr>
<tr>
<td>Hot flushes (current)</td>
<td>2.89 (4.74)</td>
<td>2.97 (4.97)</td>
<td>2.40 (3.72)</td>
<td>3.40 (4.34)</td>
</tr>
<tr>
<td>Night sweats (current)</td>
<td>1.49 (1.70)</td>
<td>1.50 (1.67)</td>
<td>1.48 (1.91)</td>
<td>1.78 (1.57)</td>
</tr>
<tr>
<td>Hot flushes (past)</td>
<td>3.72 (8.18)</td>
<td>4.65 (7.24)</td>
<td>2.45 (2.82)</td>
<td>1.33 (2.12)</td>
</tr>
<tr>
<td>Night sweats (past)</td>
<td>1.85 (2.70)</td>
<td>2.20 (3.19)</td>
<td>1.45 (1.53)</td>
<td>0.82 (1.19)</td>
</tr>
</tbody>
</table>

**Bothersomeness**

On average, women scored in the midrange of the Hot Flushes Rating Scale ($M = 4.92/10$, $SD = 2.14$, $n = 333$, and $M = 4.94/10$, $SD = 2.09$, $n = 171$), indicating that the sample, as a whole, experienced a moderate level of flushing bothersomeness.

**Daily Interference**

The overall daily interference due to vasomotor symptoms was relatively low in both this sample ($M = 2.84$, $SD = 2.45$, $n = 332$) and the sample used for the path analyses ($M = 3.01$, $SD = 2.34$, $n = 171$). Means and standard deviations for all domains of the HFRDIS are presented in Table 8. It shows that participants felt VMS interfered most with sleep, with the mean situated above the scale midpoint for both samples. Interference with mood, sexual activity and concentration were also notable. On the other hand, VMS appeared to impact less upon work, leisure or social activities.
Coping strategies for vasomotor symptoms

One item in the HFRS asked how well participants coped with their hot flushes and night sweats. About four in ten (42.8%) women indicated they coped well with their vasomotor symptoms (i.e., responded 7 or over on the scale), while nearly two in ten (18.6%) stated they did not cope well (i.e., responded 3 or under on the scale). Three hundred and thirty participants fully completed the Hot Flush Behaviour Scale and, in general they used more positive strategies \( M = 3.31, \text{SD} = .90 \) and cooling \( M = 2.72, \text{SD} = 1.34 \) and less avoidance \( M = .92, \text{SD} = .86 \) to cope with vasomotor symptoms. The statistics for positive, cooling and avoidance strategies were similar for the sample used in the path analyses \( n = 171 \), respectively \( M = 3.27, \text{SD} = .89, M = 2.91, \text{SD} = 1.26, M = .85, \text{SD} = .79 \). Figure 12 presents the breakdown of strategies endorsed by participants in percentage\(^{12} \), and shows that about half the women (53%) only endorsed one type of strategies, mostly positive coping, but about a third (31%) used two types of strategies, overwhelmingly positive coping and cooling. Very few women (2%) endorsed all three types of coping, and more than one in ten (14%) did not endorse any specific strategy. The behaviour used most often by both samples were accepting HFNS (scale item 3), ignoring them, and carrying on (scale item 1) and taking action to cool down (scale item 10).

\(^{12}\) A strategy was endorsed when the participant’s response mean on a subscale was 3 and over, indicating that they would at least mildly, moderately or strongly agree with the subscale items.
Cognitive and emotional factors

Scale means and standard deviations were calculated for the whole sample \((N = 517)\) and for the sample used in the path analyses for testing the models \((n = 171)\), and are presented in Table 9. Overall, these statistics were very similar in both samples. The following observations are made for each factor:

Catastrophic thinking

There was a different pattern of responses for catastrophic thinking: the sample mean for general catastrophic thinking was just below the scale mid-point with little spread in responses, whilst the mean for specific catastrophising indicated women never or rarely catastrophised about their hot flushes, although most responses were skewed positively. On average, participants only answered “rarely” or “sometimes” to four items on the Catastrophising Thought Questionnaire for HF, in response to how they felt when experiencing a hot flush. Those items were “I cannot possibly concentrate”, “It is terrible and I feel that it is never going to get any better”, “It is awful and I feel that it overwhelms me” and “I worry all the time about whether the flushes are going to end”.

Figure 12. Breakdown of coping strategies endorsed by participants in percentage.
Control beliefs

The descriptive statistics for control beliefs over HF were similar to those found in Reynolds’s (1997a) volunteer sample aged 39-65 years ($M = 2.64$, $SD = .35$). Contrary to catastrophic thinking, the pattern in control beliefs was similar for general events and hot flushes, and on average, women in this sample tended to disagree with the scale items that stated they had little control over both life events and hot flushes. A further analysis of questions of the Perceived Control Over Hot Flush Index (PCI) reveals, however, that in response to “I have considerable ability to control my hot flushes”, participants responded on average in the scale mid-point, i.e., neither agree nor disagree. Interestingly, the question of the PCI that received the highest mean (indicating the lowest control) was about whether participants could usually tell the days when their hot flushes were going to flare up (item 11). Items participants least agreed with were item 1 (“Hot flushes are controlling my life”) and item 10 (“I rely on other people to help me cope with my hot flushes”).

Anxiety sensitivity

On average, participants reported experiencing low anxiety sensitivity. Data for comparisons with a non-clinical middle-age female sample was unavailable, but the ASI-3 mean in this study was comparable with non-clinical male and female samples of general population aged 19-74 reported elsewhere ($M = .87$; Michałowski, Holas, & Zvolensky, 2014) although slightly higher than samples aged 65 and older ($M = .59$; Boston, 2012).

Body consciousness

Results for Body Surveillance were similar to those obtained by McKinley and Lyon (2008) in a sample of 74 middle age women aged 50-68 years-old ($M = 4.22$, $SD = .91$), but Body Shame was higher in the current sample ($M = 4.82$, $SD = 1.10$) than in McKinley and Lyon’s sample ($M = 3.25$, $SD = 1.04$).

Depressive symptoms

Overall, the samples reported depressive symptoms rarely or little of the time, although there were very large variations in responses as shown by the standard deviations. In the sample used for the path analyses, the range of total scores spread between 0 and 45, with 112 (65.5%) participants having no or mild depressive symptoms (CES-D score range 0–15), 33 (19.3%) participants having moderate depressive symptoms (CES-D score range 16–23) and
26 (15.2%) participants scoring above 24, a cut-off score for clinically relevant depression (Lesman-Leegte, et al., 2009). Similar spreads of scores were found in the whole sample.

**Negative affect**

On average, participants reported experiencing very slight or little negative affect, which is on par with other samples from non-clinical middle-aged female populations (Daukantaitė & Zukauskiene, 2012; France, Lee, & Schofield, 1996; Stephens, Hamilton, & Pachana, 2003). The mean for positive affect was slightly below the mid-point for the scale.

**Perceived stress**

Finally, in regard to perceived stress, both samples scored on average below the scale mid-point, indicating they had experienced stress almost never or only sometimes over the past month. This was also comparable with previous studies that used middle-aged participants from the general population (Cohen & Janicki-Deverts, 2012).

**Section summary**

In summary, this sample was mostly comprised of women of Australian background, with an average age of 52, one year older than the Australian average age of the menopause. Unsurprisingly, nearly two third were postmenopausal, whilst nearly one third of the sample was premenopausal and one in ten was perimenopausal. Very few were taking hormone replacement therapy, but more than one in ten women were taking antidepressant medication. Hot flushes were reported more frequently by perimenopausal women, but night sweats were more often reported by postmenopausal participants. Frequency of vasomotor symptoms increased during the perimenopausal period, although significance was not determined. In general, women indicated a medium level of bothersomeness, with more interference with their sleep. Generally, they perceived themselves as coping well emotionally with their menopause, but as having difficulty coping with vasomotor symptoms, for which they used primarily positive strategies and cooling. The general cognitive and emotional profile of this sample revealed the following: women had a low level of anxiety sensitivity, although they feared social evaluation most; scores in relation to catastrophic thinking were around the midpoint for general events but were low when relating specifically to hot flushes (this may be explained by the differential content of both questionnaires), on the other hand, women indicated feeling quite in control of both events in their life and their hot flushes. Most women had no or few depressive symptoms, but a
sizeable group scored over the threshold for possible clinical depression; they also reported low negative affect, on par with previous studies with similar samples. Body surveillance was also comparable to similar samples but body shame was higher, which may be linked to a large group of women being in the overweight/pre-obese range. Generally, this sample was healthy physically and mentally, with relatively low perceived stress experienced over the past month.

Table 9
Means and Standard Deviations for all Cognitive and Emotional Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Whole samplea</th>
<th>Sample used in path analysesa 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Anxiety sensitivity (ASI-3)2</td>
<td>.98 (.76)</td>
<td>1.04 (.78)</td>
</tr>
<tr>
<td>Physical</td>
<td>.90 (.84)</td>
<td>.96 (.85)</td>
</tr>
<tr>
<td>Cognitive</td>
<td>.74 (.87)</td>
<td>.83 (.88)</td>
</tr>
<tr>
<td>Social</td>
<td>1.30 (.88)</td>
<td>1.34 (.94)</td>
</tr>
<tr>
<td>Catastrophic thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General (CCQ-M)3</td>
<td>2.95 (.71)</td>
<td>2.98 (.75)</td>
</tr>
<tr>
<td>Specific to VMS (CTQ)4</td>
<td>.75 (.83)</td>
<td>.75 (.85)</td>
</tr>
<tr>
<td>Depressive symptoms (CES-D)5</td>
<td>.62 (.55)</td>
<td>.63 (.51)</td>
</tr>
<tr>
<td>Mood</td>
<td>.49 (.62)</td>
<td>.47 (.56)</td>
</tr>
<tr>
<td>Somatic</td>
<td>.90 (.69)</td>
<td>.81 (.57)</td>
</tr>
<tr>
<td>Well-being</td>
<td>.74 (.76)</td>
<td>.77 (.77)</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>.33 (.59)</td>
<td>.30 (.52)</td>
</tr>
<tr>
<td>Negative affect (PANAS)2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1.64 (.66)</td>
<td>1.59 (.60)</td>
</tr>
<tr>
<td>Positive</td>
<td>3.36 (.83)</td>
<td>3.32 (.84)</td>
</tr>
<tr>
<td>Control beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General (PMS)2</td>
<td>2.98 (.57)</td>
<td>2.94 (.60)</td>
</tr>
<tr>
<td>Specific to VMS (PCI)4</td>
<td>2.28 (.33)</td>
<td>2.28 (.33)</td>
</tr>
<tr>
<td>Body consciousness (OBC)6</td>
<td>4.46 (.88)</td>
<td>4.46 (.89)</td>
</tr>
<tr>
<td>Body shame</td>
<td>4.10 (1.00)</td>
<td>4.01 (.99)</td>
</tr>
<tr>
<td>Body surveillance</td>
<td>4.82 (1.10)</td>
<td>4.91 (1.10)</td>
</tr>
<tr>
<td>Perceived stress (PSS-10)7</td>
<td>2.52 (.66)</td>
<td>2.51 (.66)</td>
</tr>
</tbody>
</table>

Notes:
# See different sample sizes below:
For sample used in the path analysis, 1 n = 171
For whole sample, 2 N = 517, 3 N = 513, 4 n = 330, 5 N = 511, 6 N = 514, 7 N = 516
Aim 1: Understanding menopausal representations

Cognitive and emotional representations of the menopause

The MRQ was fully completed by 387 participants, three of whom did not indicate their menopausal status. A complete list of symptoms identified as part of the menopause is presented in Figure 13. It shows that hot flushes and night sweats were the most commonly attributed symptoms, but also that more than half women believed sleep difficulty, decreased sexual interest and vaginal dryness were linked to their menopause. About half the participants did not believe that depression and anxiety were part of their menopause but about one in five women believed they were. Participants tended to be slightly more certain about mood swings with 42% believing they were part of their menopause.

![Figure 13](image-url)

*Figure 13. Percentage of symptoms identified as the menopause by YES, NO or UNCERTAIN categories, across all menopausal status, in order of positively identified symptoms.*
The two tables below present the means and standard deviations for all MRQ subscales (Table 10) and items (Table 11). Table 10 also includes the descriptive statistics for the sample used in the path analyses. The sample used in the model analyses \((n = 171)\) had comparable menopausal representations to the overall sample \((N = 517)\), although the cognitive representation was slightly more negative. On average, participants identified between seven and eight symptoms relating to their menopause (Identity). In general, the cognitive representations were neutral or positive and, on average, participants were either neutral or disagreed that their menopause had a negative impact. Rather, they saw the menopause as a relief, especially with regards to cessation of menstruation, but felt slightly more ambivalent about whether it constituted a new phase. They perceived they had fairly good control over their menopause and coped reasonably well with it, and thought their menopause would be long rather than short, although they usually agreed their symptoms would improve with time. In general, the emotional representation was positive and women tended to disagree that the menopause made them feel depressed, upset, angry, worried, anxious and afraid.

Table 10

<table>
<thead>
<tr>
<th>Domains</th>
<th>Overall sample</th>
<th>Sample used in path analyses(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Across status</td>
<td>PRE</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Identity(^2)</td>
<td>7.35 (.54)</td>
<td>7.59 (.31)</td>
</tr>
<tr>
<td>Consequence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Impact</td>
<td>3.43 (.71)</td>
<td>3.24 (.68)</td>
</tr>
<tr>
<td>Relief</td>
<td>3.86 (.81)</td>
<td>3.48 (.66)</td>
</tr>
<tr>
<td>New phase</td>
<td>3.19 (.75)</td>
<td>3.10 (.58)</td>
</tr>
<tr>
<td>Control/cure</td>
<td>3.67 (.72)</td>
<td>3.52 (.77)</td>
</tr>
<tr>
<td>Timeline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long time</td>
<td>3.24 (.67)</td>
<td>3.21 (.52)</td>
</tr>
<tr>
<td>Short time</td>
<td>2.45 (.81)</td>
<td>2.62 (.62)</td>
</tr>
<tr>
<td>Emotional representation</td>
<td>3.97 (.79)</td>
<td>3.63 (.75)</td>
</tr>
</tbody>
</table>

\(^{1}\) Across all menopausal status

\(^{2}\) Identity: number of symptoms positively identified

Notes: Higher scores for the dimensions of Consequence, Control/cure, Timeline and Emotional Representation indicate better menopausal representations

PRE = Premenopause, PERI = Perimenopause, POST = Postmenopause

Three participants who completed the MRQ did not indicate their menopausal status. Only 372 participants responded to the symptom list (Identity), two of which did not indicate their menopausal status.

133
Table 11

Means, Standard Deviations and Sample Sizes for Each Item of the Menopause Representations Questionnaire, by Subscales

<table>
<thead>
<tr>
<th>Item nb</th>
<th>Items</th>
<th>Subscale</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Going through the menopause has an impact on my life</td>
<td>Negative impact ¹</td>
<td>2.72</td>
<td>1.18</td>
</tr>
<tr>
<td>4</td>
<td>The menopause has affected the way I see myself as a person</td>
<td>Negative impact ¹</td>
<td>3.65</td>
<td>1.03</td>
</tr>
<tr>
<td>6</td>
<td>I feel less confident since the menopause</td>
<td>Negative impact ¹</td>
<td>3.80</td>
<td>.97</td>
</tr>
<tr>
<td>10</td>
<td>The menopause has affected the way others see me</td>
<td>Negative impact ¹</td>
<td>3.82</td>
<td>.96</td>
</tr>
<tr>
<td>12</td>
<td>I feel more emotional than I did before the menopause</td>
<td>Negative impact ¹</td>
<td>3.16</td>
<td>1.09</td>
</tr>
<tr>
<td>2</td>
<td>It’s a relief to be free from the risk of pregnancy #</td>
<td>Relief ¹</td>
<td>3.56</td>
<td>1.08</td>
</tr>
<tr>
<td>11</td>
<td>I am pleased that my periods have come to an end #</td>
<td>Relief ¹</td>
<td>4.15</td>
<td>.90</td>
</tr>
<tr>
<td>9</td>
<td>I feel more content during this phase of life #</td>
<td>New phase ¹</td>
<td>3.06</td>
<td>.89</td>
</tr>
<tr>
<td>13</td>
<td>It is good to be moving into a new phase of life #</td>
<td>New phase ¹</td>
<td>3.33</td>
<td>.86</td>
</tr>
<tr>
<td>5</td>
<td>Overall I feel I’m coping reasonably well with my menopause #</td>
<td>Control/cure</td>
<td>3.92</td>
<td>.95</td>
</tr>
<tr>
<td>8</td>
<td>If I have problems during the menopause, I know what I can do to help myself #</td>
<td>Control/cure</td>
<td>3.48</td>
<td>.94</td>
</tr>
<tr>
<td>14</td>
<td>I am confident that I can deal with any changes that my menopause might bring #</td>
<td>Control/cure</td>
<td>3.65</td>
<td>.88</td>
</tr>
<tr>
<td>17</td>
<td>I feel I have the resources to manage my menopause well #</td>
<td>Control/cure</td>
<td>3.63</td>
<td>.90</td>
</tr>
<tr>
<td>7</td>
<td>My menopause will last a long time</td>
<td>Long time ²</td>
<td>2.81</td>
<td>1.04</td>
</tr>
<tr>
<td>16</td>
<td>In time my menopausal symptoms will improve #</td>
<td>Long time ²</td>
<td>3.66</td>
<td>.74</td>
</tr>
<tr>
<td>3</td>
<td>My menopause will last about a year #</td>
<td>Short time ²</td>
<td>2.33</td>
<td>.95</td>
</tr>
<tr>
<td>15</td>
<td>My menopause will last a short time #</td>
<td>Short time ²</td>
<td>2.57</td>
<td>.89</td>
</tr>
<tr>
<td>18</td>
<td>I get depressed when I think about my menopause</td>
<td>Emotional Rep³</td>
<td>3.93</td>
<td>.97</td>
</tr>
<tr>
<td>19</td>
<td>When I think about my menopause I get upset</td>
<td>Emotional Rep³</td>
<td>4.11</td>
<td>.89</td>
</tr>
<tr>
<td>20</td>
<td>My menopause makes me feel angry</td>
<td>Emotional Rep³</td>
<td>4.15</td>
<td>.88</td>
</tr>
<tr>
<td>21</td>
<td>My menopause does not worry me #</td>
<td>Emotional Rep³</td>
<td>3.71</td>
<td>1.11</td>
</tr>
<tr>
<td>22</td>
<td>My menopause makes me feel anxious</td>
<td>Emotional Rep³</td>
<td>3.85</td>
<td>1.00</td>
</tr>
<tr>
<td>23</td>
<td>My menopause makes me feel afraid</td>
<td>Emotional Rep³</td>
<td>4.07</td>
<td>.89</td>
</tr>
</tbody>
</table>

n = 387

# Reversed items
¹ Consequence dimension
² Timeline dimension
³ Emotional representation

Relationships between cognitive and emotional representations of the menopause

Bivariate correlation analyses between Emotional MR and Cognitive MR, as well as the four cognitive representation dimensions were performed, and Pearson’s coefficients are presented in Table 12. It shows that the cognitive and emotional menopausal representations
are strongly related. Specifically, participants who perceived the menopause as having negative consequences and having less control over their menopause tended to endorse more negative emotional statements. On the other hand, the number of symptoms identified or the estimated duration of the menopause were more weakly correlated to the Emotional MR. Cognitive MR subscales were all significantly correlated; relationships were, however, either weak or moderate, except for the relationship between Consequence and Control/Cure, which was strong.

Table 12
Correlations Between Cognitive and Emotional Menopause Representations

<table>
<thead>
<tr>
<th>Measures</th>
<th>Cognitive MR</th>
<th>Emotional MR</th>
<th>Identity</th>
<th>Consequence</th>
<th>Timeline</th>
<th>Control/cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive MR</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional MR</td>
<td>.67**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identity</td>
<td>.66**</td>
<td>.37**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequence</td>
<td>.72**</td>
<td>.62**</td>
<td>.27**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeline</td>
<td>.65**</td>
<td>.29**</td>
<td>.21**</td>
<td>.34**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control/cure</td>
<td>.77**</td>
<td>.61**</td>
<td>.28**</td>
<td>.53**</td>
<td>.30**</td>
<td></td>
</tr>
</tbody>
</table>

\( n = 387 \)

** Significant at 0.01 level (2-tailed)

The menopause representations across menopausal stages

A total of 387 participants completed the Menopause Representations Questionnaire; three of whom did not indicate their menopausal status. One-way between-subjects ANOVA analyses were conducted to assess whether there were significant differences in age between the menopausal status. The sizes of groups compared were unequal, thus Tukey-Kramer tests for post-hoc analyses were selected because they are more appropriate to use with different size samples (Hayter, 1984). Levene’s statistics were non-significant for each analysis, indicating non-violation of homogeneity of variance. Significant differences in age were found across status, \( F(2, 381) = 83.11, p < .01, \eta^2 = .30. \) There was no significant difference in age between pre- \((M = 49.52, SD = 4.15)\) and perimenopausal women \((M = 49.41, SD = 3.82)\), however, postmenopausal women were significantly older than both pre- and peri-menopausal women \((M = 55.09, SD = 3.63, p < .01\) for both comparisons).
One-way between-subjects ANOVA analyses were also conducted to assess whether there were differences in menopausal representations across menopausal stages. Levene’s statistics were non-significant for the analyses, and again Tukey-Kramer tests for post-hoc analyses were selected. The reader is reminded that for those analyses, lower MR means indicate more positive representations. The one-way ANOVA test showed there were significant differences across menopausal stages in Total, Cognitive and Emotional MR, respectively $F(2, 381) = 8.54, p < .01, \eta^2 = .043$, $F(2, 381) = 4.32, p < .05, \eta^2 = .022$, $F(2, 381) = 9.70, p < .01, \eta^2 = .048$. Figure 14 presents the plotted means for the Total, Cognitive and Emotional MR. Post-hoc analyses showed that postmenopausal women ($M = -.09, SD = .72$) had a more positive Total MR than pre- ($M = .28, SD = .71, p < .01$) and perimenopausal women ($M = .25, SD = .83, p < .05$). The difference, however, was not significant between the pre- and perimenopausal groups. For the Cognitive MR, there was only a significant difference between the post- ($M = -.05, SD = .61, p < .05$) and perimenopausal groups ($M = .20, SD = .65$), but, again, postmenopausal women ($M = -.13, SD = .97$) had a more positive Emotional MR than both pre- ($M = .43, SD = .95, p < .01$) and perimenopausal women ($M = .30, SD = 1.11, p < .05$). Once more, there was no difference between pre- and perimenopausal women with respect to their Emotional MR. Thus, hypothesis $H_1$ was supported.

Figure 14. Means for Overall, Cognitive and Emotional MR by menopausal status.
Note: lower scores indicate more positive representations
In order to examine whether there were differences across stages on specific dimensions of the cognitive menopause representation, further one-way ANOVA test were performed on the subscales. Figure 15 shows the plotted means for each dimension. Levene’s statistics were non-significant for Identity, Consequences and Control/cure but significant for Timeline, thus the Kruskall-Wallis H Test for non-parametric analyses was used for the latter. There was no significant difference for the number of symptoms perceived as part of participants’ menopause (Identity) or perceived duration of the menopause (Timeline).

Conversely, differences were found for the dimensions of Consequence $F(2, 381) = 12.14, p < .01, \eta^2 = .060$, and Control/cure $F(2, 381) = 4.28, p < .05, \eta^2 = .022$. Again Tukey-Kramer tests were performed, and showed that only postmenopausal women $(M = -.09, SD = .97, p < .05)$ believed they had slightly more control than perimenopausal women $(M = .29, SD = 1.02)$. On the other hand, both pre- $(M = .29, SD = .55, p < .01)$ and perimenopausal women $(M = .30, SD = .69, p < .01)$ believed their menopause would have worse consequences than postmenopausal women $(M = -.10, SD = .70)$. There was no statistical difference between the pre- and perimenopausal women groups for those two dimensions.

![Figure 15](image.png)

*Figure 15. Means for the MR dimensions of Identity, Consequence, Timeline and Control by menopausal status.*

*Note: lower scores indicate more positive representations*
Further analyses were performed to examine differences across menopausal stages for the three sub-dimensions of Consequences (i.e., Negative Impact, Relief and New Phase). The means for the three sub-dimensions are presented in Figure 16. Levene’s statistics were significant for New Phase, and, again, the Kruskall-Wallis H Test was used for this sub-scale. No statistical differences were found between groups in the way women perceived the menopause to be a new phase. Significant differences, however, were found for Negative Impact, $F(2, 381) = 3.44, p < .05, \eta^2 = .018$, and Relief $F(2, 381) = 13.36, p < .01, \eta^2 = .066$. Post-hoc analyses using Tukey-Kramer tests revealed that postmenopausal women ($M = -.08, SD = 1.01$) tended to believe less that the menopause would have a negative impact compared with premenopausal women ($M = .26, SD = .95, p < .05$). Postmenopausal women ($M = -.15, SD = .99$) also tended to believe more that the menopause would offer relief compared with both pre- ($M = .47, SD = .82, p < .01$) and perimenopausal women ($M = .39, SD = .98, p < .01$).

![Figure 16](image-url)  
*Figure 16. Means plots for the sub-dimensions of Consequences (Negative Impact, Relief and New Phase) by menopausal status.*  
Note: lower scores indicate more positive representations.

In summary, postmenopausal women were significantly older than pre- and perimenopausal women. They had more positive menopausal representations overall (i.e., when cognitive and emotional representations were combined) and a more positive emotional representation than both pre- and perimenopausal women. Postmenopausal women had a more positive cognitive representation than perimenopausal women, but there was no significant difference with the pre-menopausal group. There were no
significant differences between groups for the dimensions of Timeline and Identity, but postmenopausal women believed to have more control over their menopause than perimenopausal women, and thought their menopause would not have as negative consequences as women in both the pre- and perimenopause groups. In particular, postmenopausal women were less likely to believe their menopause had a negative impact compared with premenopausal women, and more likely to believe that the menopause offered relief compared with both pre- and perimenopausal women. Together, these results show that postmenopausal women held a more positive representation of the menopause overall, and in several salient dimensions of the menopausal representations, compared with the other two groups.

**Aim 2 – Testing how cognitive and emotional factors interact with the menopause representation and vasomotor symptom appraisals**

**Relationships between general and VMS-specific cognitive factors**

Correlations analyses using Pearson’s coefficient were performed to determine if women held different catastrophic and control beliefs for general events and vasomotor symptoms (Hypothesis $H_2$). Results show that, as expected, there was a significant moderate negative relationship between general control beliefs and VMS-specific control beliefs, for which higher scores corresponded to less control, $r = -.36, n = 320, p < .001$. Also, as expected, there was a significant positive relationship, albeit weaker, between general- and VMS-specific catastrophic thinking ($r = .18, n = 320, p < .005$). Thus, hypothesis $H_2$ was upheld.

**Individual model hypotheses**

The hypotheses for the various pathways in the model were tested as follows:

$H_3$ Catastrophic thinking, control beliefs, negative affect, perceived stress and negative body consciousness will predict HF/NS bothersomeness, and;

$H_4$ Anxiety sensitivity will predict perceived HF/NS frequency.

Path analyses were conducted to test the above hypotheses. No control variables were entered as none were found to predict bothersomeness or frequency. Only two cognitive factors
were found to have direct effects on VMS bothersomeness: perceived control ($\beta = .51$, SE = .14, $p < .001$) and catastrophic thinking ($\beta = .25$, SE = .06, $p < .001$). Together the variables explained 51.4% of the variance in bothersomeness ($R_{adj}^2 = .499$). Anxiety sensitivity did not predict VMS frequency ($\beta = .14$, SE = .01, $p = .08$). Thus, $H_3$ was partly supported, but $H_4$ was not supported.

$H_5$ Depressive symptoms will influence negative affect, which in turn will influence the menopause representation.

A path analysis was performed to assess the indirect effects of depressive symptoms on the menopause representation via the mediation of negative affect. Bootstrapping analyses showed that the total effects of depressive symptoms on Total MR were significant ($\beta = .50$, SE = .06, $p < .001$), as were the direct effects ($\beta = .48$, SE = .10, $p < .001$), $R^2 = .25$. Whilst depressive symptoms had a direct effect on negative affect ($\beta = .68$, SE = .04, $p < .001$), negative affect did not have a direct effect on Total MR ($\beta = .02$, SE = .14, $p = .93$, lower 95% CI = -.26, upper 95% CI = .28, two-tailed) and did not mediate the relationship between depressive symptoms and Total MR. Therefore, $H_5$ was not supported; the pathway depressive symptoms-negative affect-Total MR was removed from subsequent analyses, and negative affect was considered as a standalone exogenous variable.

$H_6$ Negative menopause representations will predict the negative appraisal of HF/NS as measured by perceived frequency and bothersomeness, and;

$H_7$ HF/NS frequency will predict HF/NS bothersomeness, and;

$H_8$ HF/NS perceived bothersomeness and frequency will predict daily interference due to vasomotor symptoms.

Path analyses were used to determine the relationships between Total MR and VMS appraisals (frequency, bothersomeness and daily interference). A model was constructed in which Total MR was regressed on VMS frequency, bothersomeness, and daily interference, frequency was regressed on bothersomeness, and both frequency and bothersomeness were regressed on interference. Results show significant effects of Total MR on frequency ($\beta = .38$, SE = .02, $p < .001$), on bothersomeness ($\beta = .58$, SE = .13, $p < .001$) and on daily interference ($\beta = .24$, SE = .31, $p < .001$); $H_6$ was therefore upheld. There was also a significant effect of
frequency on bothersomeness ($\beta = .16$, SE = .64, $p < .01$), in support of $H_7$. Whilst the direct
effect of bothersomeness on daily interference was significant ($\beta = .56$, SE = .15, $p < .001$), the
effect of frequency on daily interference was not ($\beta = .07$, SE = 1.23, $p = .19$). Hypothesis $H_8$
was therefore only partially supported. Consequently, the pathway Frequency-Daily interference
was removed from the model, which had a good fit: $\chi^2 = 1.68$, df = 1, $p = .20$, CFI = .997,
TLI = .985, RMSEA = .063 (90% CI: .000-.225), number of distinct parameters = 13. The
trimmed model showing the relationships between Total MR and VMS appraisals is presented in
Figure 17, with the final standard estimates and squared variances ($R^2$).

![Figure 17. Model (trimmed) testing the relationships between the menopause representation and VMS appraisal.](image)

*Note: Standardised regression coefficients ($\beta$) and squared variances $R^2$ are shown.*

$H_9$ *The effects of anxiety sensitivity, body consciousness, negative affect, catastrophic thinking, control beliefs and perceived stress on HF/NS perceived frequency, bothersomeness and daily interference due to VMS will be mediated by the menopause representations.*

Table 13 presents the individual mediation pathways for cognitive and emotional
factors and perceived stress as exogenous variables, Total MR as a mediator, and frequency,
bothersomeness and daily interference related to VMS as endogenous variables (EV). Effect
sizes $R^2$ are also presented. The bootstrapping method was used to assess the significance of
each individual mediation pathway. Results show that all beta weights for indirect effects were
significant, indicating that Total MR mediated the effects of all cognitive/emotional factors and perceived stress on each VMS appraisals; these results strongly support the hypothesis.

Testing the proposed cognitive model of VMS

Figure 6 represented a proposed cognitive model of vasomotor symptoms (see Chapter 5). This model was tested using path analyses in SPSS AMOS. Factors that may affect the model variables, namely education, BMI, and use of antidepressants were entered in the model as control variables, and were regressed on Total MR and all three VMS appraisal variables, i.e., frequency, bothersomeness and daily interference (note: in sample used for the following analyses \( n = 171 \), only two participants indicated that they used HRT, and therefore this variable was not considered as a control variable). All cognitive and emotional factors (depressive symptoms, negative affect, control beliefs, anxiety sensitivity, catastrophic thinking and body consciousness), as well as perceived stress, were regressed on Total MR and all three dependent variables to identify direct effects. Following results from previous analyses in relation to hypotheses 7 to 9, Total MR was regressed on frequency, bothersomeness and daily interference, frequency was regressed on bothersomeness and bothersomeness on interference.

The initial model was then trimmed of all non-significant pathways in a hierarchical systematic manner that included performing all estimate analyses at each step. The following results were obtained through the process. First, none of the control variables maintained their direct effects once they were included in the model and were therefore removed. Anxiety sensitivity, body consciousness and negative affect did not predict Total MR, frequency, bothersomeness or interference either and were also removed. As expected, Total MR predicted bothersomeness \((\beta = .27, SE = .14, p < .001)\), interference \((\beta = .13, SE = .30, p < .05)\), and frequency \((\beta = .38, SE = .02, p < .001)\). Frequency predicted bothersomeness \((\beta = .15, SE = .54, p < .01)\) and bothersomeness predicted interference \((\beta = .50, SE = .14, p < .001)\). Four exogenous variables had direct effects on Total MR: control beliefs \((\beta = .36, SE = .07, p < .001)\), catastrophic thinking \((\beta = .17, SE = .03, p < .05)\), depressive symptoms \((\beta = .16, SE = .05, p < .05)\) and perceived stress \((\beta = .14, SE = .07, p < .05)\). Two of those variables directly predicted bothersomeness: control beliefs \((\beta = .37, SE = .13, p < .001)\) and catastrophic thinking \((\beta = .20, SE = .06, p < .01)\). Daily interference due to VMS was also predicted by catastrophic thinking \((\beta = .18, SE = .12, p < .01)\) and perceived stress \((\beta = .17, SE = .20, p < .01)\).
Table 13

*Individual Mediation Analyses for Cognitive and Emotional Factors and HF/NS Appraisals (Frequency, bothersomeness and Daily Interference Related to VMS) with Menopause Representation as a Mediator*

| Independent variables | Total effects |          |          | Direct effects |          |          | Indirect effects |          |          | Confidence intervals |          |          |          |          |          |          |          |          |          |          |          |
|-----------------------|---------------|----------|----------|---------------|----------|----------|------------------|----------|----------|---------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|
| EV: Frequency         |               |          |          |               |          |          |                  |          |          |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Control beliefs       | .296**        | .069     | .123     | .087          | .173**   | .051     | .008             | .278     | .15     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Depressive symptoms   | .186*         | .070     | .000     | .081          | .187**   | .047     | .104             | .292     | .14     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Negative affect       | .096          | .084     | -.039    | .077          | .134**   | .044     | .061             | .235     | .14     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Catastrophic thinking | .122          | .107     | -.108   | .115          | .231**   | .053     | .140             | .349     | .15     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Anxiety sensitivity   | .135          | .075     | -.015   | .078          | .150**   | .041     | .080             | .244     | .14     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Body consciousness    | -.020         | .078     | .089    | .079          | -.109**  | .039     | -.198            | -.045    | .15     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Perceived stress      | .216**        | .078     | .045    | .086          | .171**   | .046     | .091             | .276     | .14     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| EV: Bothersomeness    |               |          |          |               |          |          |                  |          |          |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Control beliefs       | .672**        | .048     | .457**   | .059          | .214**   | .036     | .148             | .290     | .55     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Depressive symptoms   | .338**        | .071     | .029    | .071          | .309**   | .050     | .212             | .412     | .41     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Negative affect       | .271**        | .084     | .058    | .085          | .213**   | .066     | .089             | .348     | .41     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Catastrophic thinking | .560**        | .090     | .308**  | .106          | .252**   | .045     | .173             | .351     | .48     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Anxiety sensitivity   | .334**        | .075     | .100    | .076          | .234**   | .050     | .142             | .339     | .42     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Body consciousness    | -.299**       | .070     | -.136*  | .059          | -.163**  | .046     | -.257            | -.076    | .42     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Perceived stress      | -.341**       | .070     | .044    | .073          | .297**   | .056     | .192             | .411     | .41     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| EV: Daily Interference|               |          |          |               |          |          |                  |          |          |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Control beliefs       | .585**        | .052     | .341**  | .063          | .244**   | .041     | .168             | .333     | .47     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Depressive symptoms   | .484**        | .072     | .230**  | .078          | .253**   | .043     | .175             | .345     | .43     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Negative affect       | .321**        | .085     | .120    | .078          | .201**   | .060     | .089             | .323     | .40     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Catastrophic thinking | .612**        | .086     | .390**  | .107          | .222**   | .044     | .147             | .321     | .50     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Anxiety sensitivity   | .428**        | .068     | .216**  | .064          | .212**   | .042     | .134             | .297     | .43     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Body consciousness    | -.341**       | .070     | -.185** | .060          | -.156**  | .045     | -.249            | -.072    | .42     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Perceived stress      | .492**        | .067     | .249**  | .075          | .244**   | .047     | .159             | .346     | .44     |                     |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |

n = 171

* Significant at .05 level, ** Significant at .01 level

Note: EV = Endogenous Variable, Mediator = Cognitive and emotional menopause representations combined (i.e., Total MR)

All non-significant pathways were removed and the trimmed model retained an excellent fit: $\chi^2 = 13.43, df = 9, p = .14$, $CFI = .994, TLI = .981, RMSEA = .054$ (90% CI: .000-.110), number of distinct parameters = 35. The tested model is presented in Figure 18, along with significant beta weights and explained variances ($R^2$) for Total MR, frequency, bothersomeness and interference.
In summary, this section started by presenting the results of the proposed cognitive model hypotheses, which were, for the most part, supported. In particular, $H_3$ was partially supported: perceived control and catastrophic thinking directly predicted bothersomeness, but negative affect, body consciousness and perceived stress did not. $H_4$, was not supported: anxiety sensitivity did not predict VMS frequency. $H_5$ was not supported either: negative affect did not mediate the effects of depressive symptoms on the menopause representation. On the other hand, $H_6$ was upheld: the menopause representation had a direct effect on both bothersomeness and frequency; it also had a direct effect on daily interference. $H_7$ was also supported: frequency did predict bothersomeness, but $H_8$ was only partially supported: bothersomeness predicted daily interference, but frequency did not. Finally, $H_9$ was fully supported: the menopause representation mediated all the relationships between the cognitive factors (i.e., anxiety sensitivity, body consciousness, negative affect, catastrophic thinking, control beliefs and perceived stress) and each of the three measures of VMS appraisals. These results informed the next section, which presents findings from the path analyses that tested the proposed cognitive model of VMS.
presented in Chapter 5. The step-by-step approach taken in testing the model allowed for significant pathways to be kept, while non-significant pathways were removed, and led to identifying a model that retained an excellent fit. This tested model, in turn, will be combined with the behavioural coping model, tested in the next section, to evaluate, at this point, an integrative cognitive-behavioural vulnerability model of vasomotor symptoms.

Aim 3 - Testing how coping interacts with cognitive and emotional factors, the menopause representations and vasomotor symptom appraisals

The third aim of this study focused on the role of coping strategies in understanding the cognitive/emotional experience of vasomotor symptoms. Correlation matrices are first presented to test hypotheses $H_{10}$ and $H_{11}$, which focused on the relationships between avoidance coping and cognitive/emotional factors, the menopause representations and bothersomeness. Table 14 includes the correlations between all the study variables, while Table 15 presents the relationships between the specific menopause representation dimensions, VMS appraisal and coping strategies.

Relationships between menopausal representations, cognitive/emotional factors, appraisal of VMS and coping strategies

The correlations between all the study variables ($n = 171$) are presented in Table 14. Pearson’s coefficients were all significant at .01 level for the relationships amongst all cognitive and emotional factors. VMS bothersomeness was very strongly correlated with daily interference; it also strongly correlated with Total MR, control beliefs, catastrophic thinking and avoidance, and had moderate relationships with the other variables. Frequency was moderately correlated with Total MR, control beliefs, bothersomeness and daily interference, and weakly correlated with depressive symptoms, perceived stress, avoidance coping and cooling. Daily interference was strongly related to Total MR, control beliefs, depressive symptoms, catastrophic thinking, anxiety sensitivity, perceived stress and avoidance coping. It was moderately associated with all remaining variables.
Results also showed moderate to strong relationships between cognitive factors and avoidance coping in support of $H_{10}$. In particular, more avoidant coping was used by women who scored high on anxiety sensitivity, catastrophic thinking, depressive symptoms and negative affect, had lower control beliefs and were more body conscious. Correlations were mostly moderate. Conversely, women who used more positive coping behaviour scored lower on anxiety sensitivity, catastrophic thinking, depressive symptoms and negative affect, had higher control beliefs and were less body conscious. Relationships, however, were mostly weak. Although the direction of the relationships for cooling followed the same pattern as for avoidance, there were no significant relationships between using cooling strategies and depressive symptoms, negative affect, anxiety sensitivity, body consciousness and perceived stress. Cooling, however, was used significantly more often by women who tended to catastrophise and had low control beliefs.

**Relationships between menopause representation dimensions, appraisal of VMS and coping strategies**

Finally, specific relationships between the menopause representation dimensions, coping, and the appraisal of HF/NS were examined, using Pearson’s $r$ for the analyses. Again, the reader is reminded that, for these analyses, high scores on all MR dimensions indicate more negative representations. In support of $H_{11}$, results show that using more avoidant behaviour was associated with identifying more menopausal symptoms, anticipating more negative consequences and believing in having less control over the menopause. Timeline was also weakly associated with avoidance. Avoidance, in turn, was strongly and positively associated with bothersomeness. Conversely, positive behaviour was negatively correlated with Consequence, Timeline, Control/cure and bothersomeness, but not with Identity. Although the relationships between cooling behaviour and cognitive menopause representation subscales followed the same pattern as avoidance behaviour again, cooling was only significantly related to Timeline, Control and bothersomeness.
Table 14
Correlations between Models Variables (Menopause Representation, Cognitive and Emotional Factors, VMS Appraisals and Coping Strategies)

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<td>.41</td>
<td>.27</td>
<td>.61</td>
<td>.32</td>
<td>-.27</td>
<td>.34</td>
<td>.16</td>
<td>.49</td>
<td>.58</td>
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<tr>
<td>13. Coping - Cooling</td>
<td>.23</td>
<td>.22</td>
<td>.06</td>
<td>.04</td>
<td>.27</td>
<td>.09</td>
<td>-.05</td>
<td>.09</td>
<td>.20</td>
<td>.33</td>
<td>.32</td>
<td>.29</td>
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<tr>
<td>14. Coping - Positive</td>
<td>-.39</td>
<td>-.29</td>
<td>-.29</td>
<td>-.17</td>
<td>-.20</td>
<td>-.16</td>
<td>.35</td>
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<td>-.22</td>
<td>-.17</td>
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</tbody>
</table>

\[n = 171\]

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed)
* Total MR = Aggregation of standardised Cognitive and Emotional Representations scores
Table 15
Correlations between Menopause Representation Dimensions, VMS Appraisals and Coping Strategies

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
<th>8</th>
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<th>10</th>
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<tbody>
<tr>
<td>1. MR Identity</td>
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<td></td>
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<tr>
<td>2. MR Consequence</td>
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<td>3. MR Timeline</td>
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<td>.27**</td>
<td>.32**</td>
<td>.29**</td>
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<td>6. VMS bothersomeness</td>
<td>.36**</td>
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<td>.43**</td>
<td>.56**</td>
<td>.38**</td>
<td>-</td>
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<td>7. VMS interference</td>
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<td>.47**</td>
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<td>.51**</td>
<td>.38**</td>
<td>.74**</td>
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<tr>
<td>8. Coping - Avoidance</td>
<td>.30**</td>
<td>.31**</td>
<td>.16**</td>
<td>.37**</td>
<td>.16**</td>
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<td>.58**</td>
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<tr>
<td>9. Coping - Positive</td>
<td>-.15</td>
<td>-.34**</td>
<td>-.24**</td>
<td>-.26**</td>
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<td>-.36**</td>
<td>-.34**</td>
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<td>10. Coping - Cooling</td>
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<td>.20**</td>
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<td>.33**</td>
<td>.32**</td>
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<td>-.17*</td>
<td>-</td>
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</table>

n = 171
* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

The role of coping in mediating the effect of the menopause representations and VMS appraisal

It was hypothesised that the direct effects between menopausal representations and VMS appraisal would be stronger than the indirect effects via coping ($H_{12}$). To test this hypothesis, 18 separate mediation analyses combining the three coping strategies (avoidance, positive behaviour and cooling) with each of the VMS appraisals (frequency, bothersomeness and daily interference) were undertaken for Model 1 (Total MR-VMS appraisals-Coping) and Model 2 (Total MR-Coping-VMS appraisals). Table 16 displays the mediation analyses and shows several patterns. First, none of the mediations including frequency, either as mediators or as dependent variables, was significant. Second, none of the mediations including positive behaviour were significant except for those that included bothersomeness. Finally, when the mediations were significant, the standard estimates for the direct effects between independent and dependent variables were higher in Model 2 than they were in Model 1, indicating stronger relationships between Total MR and VMS appraisals than between Total MR and coping strategies. This lends partial support to $H_{12}$. 

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Table 16

*Individual Mediation Analyses for the Menopause Representation, Coping Strategies (Avoidance, Positive Behaviour and Cooling) and HF/NS Appraisals (Frequency, Bothersomeness and Daily Interference Related to VMS)*

<table>
<thead>
<tr>
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<th>β</th>
<th>SE</th>
<th>β</th>
<th>SE</th>
<th>β</th>
<th>SE</th>
<th>Lower bound</th>
<th>Upper bound</th>
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<tr>
<td>Model 1 - MR-Freq-Avoid</td>
<td>.412</td>
<td>.064</td>
<td>.408</td>
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<td>.004</td>
<td>.030</td>
<td>-.058</td>
<td>.061</td>
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<tr>
<td>Model 2 - MR-Avoid-Freq</td>
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<td>.065</td>
<td>.373</td>
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<td>.004</td>
<td>.034</td>
<td>-.063</td>
<td>.072</td>
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<td>.179</td>
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<tr>
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<td>.349</td>
<td>.065</td>
<td>.028</td>
<td>.020</td>
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<td>.030</td>
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<td>.593</td>
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<td>.054</td>
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<td>.177</td>
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<td>.012</td>
<td>.092</td>
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</table>

$n = 171$

* Significant at .05 level, ** Significant at .01 level

Notes: DV = Dependent Variable

MR = Total MR - Freq = VMS Frequency, Bother = VMS Bothersomeness,
Inter = Daily interference due to VMS, Avoid = Avoidance behaviour, Positive = Positive behaviour, Cooling = Cooling behaviour

**Best fit analyses for coping strategies mediation models**

In order to assess if coping was more likely to mediate the effects of Total MR on VMS appraisal, or, conversely, VMS appraisal was more likely to mediate the effects of Total MT on coping strategies, two models were tested against each other. This was conducted to inform the final integrative vulnerability model, presented below. The baseline models incorporating the findings from previous analyses (i.e., outlining the relationships between Total MR and VMS appraisals) are presented in Figure 19. In both models, Total MR was regressed on frequency,
bothersomeness, interference and each of the coping strategies, frequency was also regressed on bothersomeness and bothersomeness on interference. Additionally, in Model 1, each VMS appraisal was regressed on each coping strategy, and in Model 2, each coping strategy was regressed on each VMS appraisal. The model fit parameters of the baseline models are presented in Table 17. Chi square for Model 1 was not significant but it was for Model 2, the AIC was also smaller for Model 1 than for Model 2, and while both models had excellent fit indices, Model 1 had a better fit than Model 2.

Figure 19. Alternative baseline models for the relationships between menopause representation, VMS appraisals and coping behaviour.
Both models were trimmed of all non-significant pathways in the same hierarchical manner described in Aim 2, which involved systematically removing non-significant estimates and recalculating estimates at each step. Through this process, the following results were highlighted. In Model 1, Total MR predicted positive behaviour ($\beta = -.31$, SE = .07, $p < .01$) but not avoidance or cooling. Frequency and bothersomeness also predicted positive behaviour, respectively ($\beta = .17$, SE = .26, $p < .05$) and ($\beta = -.23$, SE = .03, $p < .05$), but interference did not. Avoidance was predicted by interference ($\beta = .58$, SE = .01, $p < .001$), but not by frequency or bothersomeness. Cooling was predicted by bothersomeness ($\beta = .33$, SE = .02, $p < .001$) but not by frequency or interference. In Model 2, Total MR predicted avoidance ($\beta = .41$, SE = .06, $p < .001$), positive behaviour ($\beta = -.39$, SE = .05, $p < .001$), and cooling ($\beta = .23$, SE = .04, $p < .01$). Avoidance predicted bothersomeness ($\beta = .24$, SE = .15, $p < .001$) and interference ($\beta = -.12$, SE = .31, $p < .001$), but not frequency. Positive behaviour predicted bothersomeness ($\beta = -.12$, SE = .17, $p < .05$) but neither interference nor frequency. Cooling only predicted bothersomeness ($\beta = .12$, SE = .23, $p < .05$). The trimmed models are presented in Figure 20, with significant betas and explained variances ($R^2$) and the fit indices are presented in Table 17. Results show that, again, the AIC indices were smaller for Model 1 than Model 2; the indices for Model 1 remained excellent, but were not acceptable for Model 2. Therefore, Model 1 will be incorporated in a final integrative model to be tested in the next section.

Table 17

Model Fits of Competing Models

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<tr>
<th></th>
<th>df</th>
<th>$X^2$</th>
<th>$p$</th>
<th>TLI</th>
<th>CFI</th>
<th>AIC</th>
<th>RMSEA (90% CI)</th>
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<td>.984</td>
<td>.997</td>
<td>67.170</td>
<td>.041 (.000-.129)</td>
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<td>.01</td>
<td>.880</td>
<td>.977</td>
<td>75.007</td>
<td>.115 (.049-.188)</td>
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<td>.988</td>
<td>.994</td>
<td>61.458</td>
<td>.036 (.000-.092)</td>
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<td>.929</td>
<td>.970</td>
<td>72.941</td>
<td>.088 (.038-.138)</td>
</tr>
</tbody>
</table>

$n = 171$

$^1$ Model 1 pathways: Overall Menopause Representation – VMS appraisals – Coping behaviours

$^2$ Model 2 pathways: Overall Menopause Representation – Coping behaviours – VMS appraisals
Figure 20. Alternative trimmed models for the relationships between menopause representation, VMS appraisals and coping behaviour.

Final integrative cognitive-behavioural model of VMS

This final section incorporates findings from Aim 2 and the above results. The cognitive vulnerability model and the best fit coping strategies model (Model 1) were incorporated for testing. In addition, all cognitive and emotional factors, including negative
affect, body consciousness and anxiety sensitivity, were regressed on each of the coping strategies. Again, the pathways from cognitive and emotional factors to coping strategies were systematically trimmed of all non-significant pathways in a step-by-step fashion, as described previously. Negative affect, depressive symptoms, anxiety sensitivity, control beliefs and perceived stress did not predict any of the coping strategies. Catastrophic thinking, however, had direct effects on avoidance ($\beta = .41$, $SE = .02$, $p < .001$), as did daily interference ($\beta = .33$, $SE = .01$, $p < .001$). On the other hand, bothersomeness and frequency no longer predicted positive behaviour, but body consciousness ($\beta = .25$, $SE = .02$, $p < .00$) and MR ($\beta = -.24$, $SE = .06$, $p < .01$) did. VMS bothersomeness was the only predictor of cooling behaviour ($\beta = .33$, $SE = .02$, $p < .001$). The chi square for the model was non-significant and the final integrative cognitive-behavioural model retained excellent fit indices: $\chi^2 = 51.92$, $df = 37$, $p = .053$, CFI = .984, TLI = .971, RMSEA = .049 (90% CI: .000-.078), number of distinct parameters = 53. The final model is presented in Figure 20, along with significant beta weights and explained variances ($R^2$).

**Conclusion**

The broad aim of this study was to explore the relationships between cognitive/emotional factors, menopause representations, vasomotor symptom appraisals and coping, with a view to presenting an integrative cognitive-behavioural model that would best capture those relationships. Overall, the data supported the hypotheses. The menopausal representations are presented in detail across Section 1 and 2. Data collected suggests that the participants held a neutral to positive menopause cognitive menopausal representation and that the emotional representation was generally positive. Results also showed that the way participants think about the menopause correlated with the way they feel about it. In particular, negative beliefs about consequence and control were linked to negative emotional representations. As predicted, and although there was no difference overall in menopausal representations between the pre- and perimenopausal groups, postmenopausal participants held more positive menopause representations than the other two groups.
Figure 21. Final integrative cognitive-behavioural model for the relationships between cognitive/emotional factors, menopause representation, VMS appraisals and coping behaviour.

Notes: Imputed correlations between exogenous variables are removed. Standard estimates and squared variances are shown. Arrows in dotted lines indicate significant effects between exogenous variables and VMS appraisals and coping strategies.
A series of correlations between the study variables were reported. In support of $H_2$, results show that participants who held catastrophising or control beliefs for general events also held them specifically for HF/NS (correlations between general and VMS specific variables were significant, although weak for catastrophic thinking, but moderate for control beliefs). Results from correlations analyses also supported the hypotheses relating to the relationships between cognitive factors, the menopause representation subscales and coping: avoidance was used more often by participants who scored more negatively on cognitive/emotional factors. Avoidance was also correlated with more negative menopause representations and more negative VMS appraisals. Similar patterns were found for participants who used cooling strategies, albeit with weaker effects, and opposite patterns were found for those who used positive behaviour.

The data reported in relation to Aim 2 provide support for the mediating role of Total MR in the relationship between cognitive factors and VMS appraisals. The effects, however, were weaker for the relationships between cognitive factors and Total MR than they were for the relationships between Total MR and VMS. The trimmed model, which retained an excellent fit, shows that some mediation pathways were retained: catastrophising, control beliefs, depressive symptoms and perceived stress influenced the manner in which participants formed their beliefs about the menopause, explaining 45% of the variance. In turn, those beliefs had significant effects on participants’ perceptions of how bothersome their HF/NS were, or interfered with their daily life. Surprisingly, the effects of Total MR on frequency were also quite strong. The direct effects of cognitive factors on VMS appraisals were also strong, providing further evidence, beyond the mediating role of Total MR, that cognitive factors play an important part in the perceived experience of vasomotor symptoms. Relationships between VMS appraisals were also tested and results show that, while frequency strongly influenced bothersomeness, it did not impact upon daily interference. Bothersomeness, however, had a strong direct effect on interference. The trimmed model explained 14% of the variance in frequency, 59% of the variance in bothersomeness, and 65% of the variance in daily interference.
The third aim of the study was to examine the relationships between Total MR, coping and VMS appraisals. Two models were compared: Model 1 examined the mediation pathway **Total MR-VMS appraisals-Coping** while Model 2 considered the pathway **Total MR-Coping-VMS appraisals**. Results from mediation analyses showed that the relationships between Total MR and VMS appraisals were stronger than the relationships between Total MR and coping strategies. The chi-square for the trimmed Model 1 was not significant, and the cognitive model retained excellent fit indices. The chi-square for the trimmed Model 2, however, was significant and only achieved a poor fit. Therefore, Model 1 was selected to be incorporated in the final model.

The information gathered from Aim 2 and Aim 3 was combined to test the integrative cognitive-behavioural model of VMS. At this stage, relationships between all cognitive and emotional factors and coping strategies were tested. Three of those were found to have direct effect on coping behaviour: catastrophic thinking predicted avoidance, while both perceived stress and body consciousness predicted positive strategies. Despite including a large number of variables (53 distinct parameters) and a high df (37), the chi-square for the tested integrative cognitive-behavioural model of VMS was not significant, and other fit indices were excellent. In addition to the variance explained for Total MR, VMS frequency, bothersomeness and daily interference in Aim 2, the variables included in the model explained 44% of avoidance, 11% of cooling strategies and 22% of positive behaviour.
CHAPTER 9

DISCUSSION

Chapter overview

The overall aim of this study was to enhance our understanding of cognitions about vasomotor symptoms in a sample of 517 pre-, peri- and postmenopausal women living in Australia. The research focused on the filtering role of cognitive schema in the experience of vasomotor symptoms, and in particular, it sought to understand how the personal cognitive and emotional vulnerabilities of some women may impact on their representations of the menopause, and, in turn, these representations may affect their appraisal of VMS and coping. In order to understand the context of this research, the characteristics of the sample, descriptive data about vasomotor symptoms and the menopause representations are first considered in relation to other studies. This section demonstrates that, in most aspects, this study sample was quite similar to samples used in other menopausal or health research. Results for Aim 1, which focused on understanding the representations of the menopause are then discussed. In particular, this section discusses the pattern of relationships between the dimensions of the cognitive and emotional representations, which, again, were very much aligned with previous research. An important finding that the menopause representations improve as women transition through the menopause is also addressed. The discussion of Aim 2, which focused on testing how cognitive and emotional factors interact with the menopause representations and the appraisal of VMS, first examines the significant correlations found between general and VMS-specific cognitions, before considering in detail the hypotheses upon which a first cognitive model was based; this tested model is then discussed. Aim 3, focused on coping behaviour variables, and after examining the significant associations of avoidance coping with other study variables, the discussion shifts to presenting the final integrative cognitive-behavioural model of vasomotor symptoms. A final section of this discussion chapter presents the strengths and limitations of this research, theoretical and clinical implications, as well as suggestions for future research.
Characteristics of the samples

Demographic data

In many respects, the demographic data collected from the participants was relatively homogenous and showed that the sample was quite typical of Australian middle-aged women. This is largely supported by the 1996-2013 report published by the Australian Longitudinal Study on Women’s Health (ALSWH) for its middle-age sample, which provides similar demographic data on a large scale (N = 13,715; Australian Longitudinal Study on Women’s Health, 2015). Specifically, comparable rates were found for marriage (77.9% in this study, 78-81% in the ALSWH study) and working status (79.1% working part-time or full-time in this study, almost 80% employed in the labour force in the ALSWH study). Like most Australian middle-age women, the majority of participants had two or three children (69.6%), although this rate is slightly lower at national level (61.3%; Australian Bureau of Statistics, 2006b). On the other hand, the level of education found in this study was higher than those previously published in the ALSWH studies. Many more women (31.2%) in this study had a trade/technical certificate compared with the ALSWH sample (3.5%), and more women also had an undergraduate or postgraduate degree (26.7%, compared with 16.3% in the ALSWH sample (Brown, Mishra, Lee, & Bauman, 2000). Demographic data also indicate that 63% of the participants in the ALSWH studies had no further education after high school; this rate was only 39.6% in this study. The higher level of education in this sample is surprising, given that the participants were recruited from rural areas, where people tend to have lower level of education than their urban counterparts (Australian Bureau of Statistics, 2006a). Nearly 92% of participants reported being of Australian background, but this rate is difficult to compare with larger Australian samples, as definitions of both self-reported Australian background or ethnicity can vary greatly across individuals and studies. To put it in context, however, only 74% of Australians reported being born in Australia at the last census (Australian Bureau of Statistics, 2011).

Health data

The health data collected also revealed similarities with other studies. The sample spread over 20 years in age, and the level of the participants’ physical health was quite variable. As a whole, however, the sample’s physical health was comparable with that of
other middle-age samples. For instance, physical health was on a par with published data for the overall United States population, i.e., $M = 49.4$ for 45-54 years-old, although this figure includes both men and women (Utah Department of Health, 2001). In a study of Australian women’s health habits and psychological well-being, Lee (1999) found a slightly higher mean score (51.35) on the SF-12. The study, however, surveyed women aged 45-49 years-old ($N = 272$), randomly selected from the Australian Health Insurance Commission database, and a slightly higher mean in this younger, more narrow age range sample would be expected, given that physical health scores on the SF-12 tend to diminish with age (Schofield & Mishra, 1998).

The participants’ mean Body Mass Index (28.2) was also comparable to previous research using middle-age female samples (27 in Adamson, 2007; 28.9 in Worsley et al., 2016). The majority of women in this study were in the overweight (30.7%) or obese (33.7%) range, including 4.3% in the Class 3 obesity range (i.e. BMI over 40). These findings were similar to those published by Worsley and colleagues (2016), who recently surveyed a similar aged sample of 2,020 Australian menopausal women (29.5% for overweight, 38.3% for obese), although nearly twice as many women were found to be in the Class 3 obesity range (8%) in their study.

The current use of hormone replacement therapy was low in the sample as a whole (4.6%). A low rate of HRT use was expected, as the number of prescriptions for HRT has decreased significantly over the past decade in Australia and elsewhere (Canfell et al., 2008; Verkooijen, Bouchardy, Vinh-Hung, Rapiti, & Hartman, 2009). In comparison with Australian population, the data from Worsley et al. (2016)’s study showed that 11.3% of their participants used hormone therapy. To put this study result in a larger perspective, recent research around the Western world has reported low but variable usage rates: 9% in the United States (Gass et al., 2015), 4.9% in France (Huot et al., 2008), 2.4% in the Netherlands (de Jong-van den Berg, Faber, & van den Berg, 2006).

The percentage of women who had gone through natural menopause in this study (80.1%) was comparable to previous study rates as well. Worlsey and colleagues (2016) published a rate of 77.5%, and Gibson and colleagues (2012) found that 91.0% of participants in the Study of Women’s Health Across the Nation ($n = 1,970$) had gone through the menopause naturally. In this research, 8.7% participants had undergone a hysterectomy alone,
however, published rates for this vary across the literature: 15.1% for Worlsey and colleagues and 3.9% for Gibson and colleagues, while the data gathered in the ALSWH studies (2008) highlighted that as many as 21.2% of middle-age women had had a hysterectomy. The rate of women who had had surgical menopause (10.6%) was also similar to those published previously (Australian Longitudinal Study on Women's Health, 2015; Gibson et al., 2012; Worsley et al., 2016). In this study, the percentage of oophorectomy alone, was, as expected, very low (3.2%), although higher than the ALSWH research (1.0%). Together, these comparisons indicate that the types of menopause experienced by the participants were comparable with previous research.

Women who have had a hysterectomy and/or a unilateral oophorectomy have elevated FSH levels compared to intact women, a hallmark of menopausal status (Cooper & Thorp, 1999) and these surgeries are associated with an earlier onset of the menopause (Farquhar, Sadler, Harvey, & Stewart, 2005), as well as a possible increase of frequency of vasomotor symptoms (Hunter et al., 2012). A bilateral oophorectomy often triggers immediate and severe menopausal symptoms, due to sudden loss of ovarian hormonal secretions (Hensley, 2004). The picture of how these gynaecological surgeries impact on women is still unclear. Despite strong evidence of physical health risks associated with these procedures, depressive and anxiety symptoms have not been found to be more prominent for women who had undergone a hysterectomy with or without bilateral oophorectomy in the years following the surgery (Gibson et al., 2012). Most vasomotor symptoms studies include women who have undergone hysterectomy and/or unilateral oophorectomy but usually exclude participants with bilateral oophorectomies (Schoenaker, Jackson, Rowlands, & Mishra, 2014). It was felt however that, with its focus on associations between pre-existing personality factors, schema and HF/NS experience, this research was enriched by having an all-inclusive approach.

In summary, the characteristics of this study sample were largely in line with other middle-age women samples, except perhaps for a higher reported level of education. The importance of understanding and comparing the demographics of the study sample with other larger samples is not trivial, as it allows for extrapolations to be made to the larger population.
Vasomotor symptoms

In studies of the menopause, the quantitative analysis of VMS tends to focus on two major questions: what is the prevalence of VMS in the sample, and how many VMS do participants experience on average for a given time.

The question of prevalence is first considered, bearing in mind, as stated in Chapter 2, that there are wide variations in reports of self-reported VMS frequency across studies. In this research, nearly one in five premenopausal women reported experiencing at least one hot flush daily. The reader is reminded that, women experiencing subtle, but noticeable changes in their menstruation were classified as Stage 3a (i.e., the late premenopausal stage), following the STRAW+10 criteria (Harlow et al., 2012). During this stage, women can experience vasomotor symptoms, and reports of flush prevalence have varied from 10-45% in premenopausal Australian women (Gartoulla et al., 2014). The prevalence of VMS reported by peri- and postmenopausal women was also in line with other Australian studies (Anderson, Yoshizawa, Gollschewski, Atogami, & Courtney, 2004; Gollschewski, Anderson, Skerman, & Lyons-Wall, 2004). In fact, the rates found in this study were very close to those found in the ALSWH samples (Mishra, Lee, Brown, & Dobson, 2002): for perimenopausal women, 50.0% HF and 52.1% NS, and for postmenopausal women, 43.6% HF and 42.3% NS. It should be noted that it is possible that not all flushes reported by this study participants were caused by hormonal changes. While hot flushes are primarily a phenomenon of the menopause, most women (and some men) experience flushes throughout their lives, and possible causes include systemic disease, neurological disorders, alcohol, drugs, opiates, eating habits, and food additives (Stearns et al., 2002). Thus, given that these variables were not incorporated, it is impossible for this research, and for the majority of menopausal research for that matter, to assert that all accounted VMS were caused by the menopause.

The means of VMS frequency are seldom published in studies of the menopause and, when they are, they are largely found in treatment studies that sample participants with moderate to severe flushing, which are likely to report frequencies that are not representative of the general population. It seems, however, that in this study, the frequency of daily flushing was comparable to previous research using community samples. For instance, Lindh-Åstrand and colleagues (2004) reported frequencies of 5.1 and 3.8 hot flushes per day in two samples of menopausal women aged 48–63-years, recruited from both advertisement in
the local papers and a gynaecological outpatient clinic in Sweden. This compares with mean frequencies of 3.40 for perimenopausal and 2.95 postmenopausal women in this study.

The level of flush bothersomeness experienced by the study participants was also comparable with the level found in Hunter and colleagues (2012)’s very large sample of postmenopausal women, albeit slightly higher (4.9/10 in this study compared to 4.3/10)13. Finally, interference to daily life due to flushing also followed a similar pattern in this study compared with previous research conducted in the United States (Carpenter, 2001; Chen, Booth-LaForce, Park, & Wang, 2010). Although the sample in Chen and colleagues’ study had a notably higher overall mean on the HFRDIS (39.01, compared with 24.75 in Carpenter’s study and 28.4 in this study), interference with sleep was most strongly endorsed across the three studies, followed by mood, concentration and sexual activities.

Summary and discussion of the main results

Aim 1: Understanding menopausal representations

The first aim of this study was to gain a better understanding of women’s cognitions and emotions about the menopause. This section will first focus on discussing the cognitive and emotional representations held by middle-aged women. For this, the results of the cognitive and emotional menopause representations from the Menopause Representations Questionnaire are discussed, starting with a focus on symptom reporting. Then, the question of whether cognitive and emotional menopause representations are independent or intercorrelated will be addressed.

The first comments about the menopause representation focus in the Identity dimension of the SRM. As mentioned above, the number of symptoms participants identified as part of their menopause (7 to 8) were fewer than the number reported by Hunter and O’Dea (2001), i.e., just under 12. The dimension of Identity on the MRQ lists symptoms directly attributable to the menopause (e.g., vasomotor symptoms), but also more general

13 Note: Hunter and colleagues’ study excluded women with surgical menopause.
symptoms (e.g., aches and pains, tiredness, depression) and the difference between the findings of the current study and those of Hunter and O’Dea’s could be accounted for by the sampling methods. Hunter and O’Dea’s participants were recruited from a general practice, and there was no indication in the published study whether those women sought help for menopausal symptoms or not, but it is possible they also had symptoms unrelated to the menopause.

Hot flushes and night sweats were the most frequently identified symptoms, followed by sleep difficulties. This is not unexpected, given that vasomotor symptoms and sleep disturbance are amongst the most common symptoms experienced by menopausal Australian women, although the relationship between the two symptoms remains unclear (Berecki-Gisolf, Begum, & Dobson, 2009; National Institutes of Health, 2005a). Typically, women also identified sexual symptoms (decreased sexual interest and vaginal dryness) as part of their menopause. Again, sexual problems are a common health concern for menopausal women, and vaginal dryness and dyspareunia are often reported (Dennerstein et al., 2003). Nearly half the women also believed that weight gains were directly linked to their menopause. Weight gain is not always presented in research as a core menopausal symptom, despite the evidence that, while weight increases at middle age and occurs independently of menopausal status, changes in body fat distribution and body composition may be linked to hormonal changes (Simkin-Silverman & Wing, 2000). The perception of women associating weight gain with the menopause is not trivial, as women with those beliefs may feel discouraged in maintaining healthy eating habits or exercise if they consider weight gain to have a hormonal cause, and this may need to be taken into account in by physicians or dieticians trying to address weight problems in their middle-age female patients.

Mood swings, irregular periods and tiredness were often thought to be part of the menopause, with 42% of women endorsing each of those symptoms. The prevalence of reported mood swings seems high, although roughly in line with analyses from the SWAN study (with its sample aged 40-55 years-old) showing that 56% of women reported irritability symptoms (Avis et al., 2001). The high percentage may be a result of some women in the sample having internalised the stereotypical profile of the menopausal woman as moody, despite the lack of clear evidence linking mood swings with the menopause, as highlighted in Chapter 3.
Participants were seldom uncertain about attributing irregular periods to the menopause, and, whilst 42% of women attributed menstrual fluctuations to the menopause, 47% did not. Furthermore, 65% of women did not believe heavy periods were part of their menopause. The majority of women who responded to the MRQ were postmenopausal (73.9%) and therefore, by definition, no longer experiencing menstruation. By deduction, those women responded retrospectively. According to the STRAW+10 criteria, irregular periods and/or change in menstrual flow is a principal criterion for entering the perimenopausal stage. Nearly twenty years ago, Utian and Schiff (1994) surveyed pre- and postmenopausal on their knowledge of the menopause, and 50% of them reported being aware of being menopausal because of menstrual irregularity. Given today’s widely available information through menopause lay literature and internet resources, which routinely relate the two phenomena, it is interesting that so many women still did not associate irregularity of menstrual cycles with the menopause.

Many women identified tiredness as a menopausal symptom, but many (33%) were also uncertain about it. Tiredness, while not a menopausal symptom per se, may be linked to the menopause indirectly, through the effects of night sweats and sleep disturbance, but may also be a factor of ageing or psychosocial pressures encountered by many middle-age women. In fact, the participants’ response pattern on the tiredness item is very similar to the patterns of responses on the memory loss, stiff joints and aches/pains items, which show the highest reported percentages of uncertainty (i.e., 30% or more). In some ways, the mixed responses provided on these items parallel the mixed findings in the literature about whether those symptoms are directly attributable to the menopause, as discussed in Chapter 2.

Lastly, comments on the items of depression and anxiety are warranted. Given the substantial literature on the possible causal relationship between the menopause and depression, it is interesting to note that depression was one of the least endorsed symptoms, with 53% of women believing depression was not part of their menopause, and 26% being uncertain. A similar pattern was identified for anxiety. It appears that, either women did not strongly identify mood disorders as being part of their menopause, or they did not experience any. A strength of the MRQ is that it asks women to select symptoms they believe are part of their menopause, whereas most studies measure the presence of symptoms. This, however, implies some degree of ambiguity: for instance, a negative response may indicate that a
participant does not actually experience the symptom, but may also indicate that the participant experience it but believe the symptom is not part of the menopause.

The second part of the MRQ focuses on the three other dimensions of the menopause cognitive representation (Timeline, Control/Cure and Consequences) and the emotional representation. In general, women had a neutral or positive menopause representation overall, which is in line with previous research on menopause representations or attitudes towards the menopause (Avis & McKinlay, 1991; Delanoë, 2001a; Gupta et al., 2006; Hemminki et al., 1995; Hunter & O’Dea, 2001; Kaufert et al., 1998; Pimenta et al., 2011b; Sommer et al., 1999). Specifically, women in this sample were divided about how long their menopause would last, but felt quite in control and reported that they coped well with their menopause. Strikingly, the means on all the cognitive representation dimensions were very similar to Hunter and O’Dea’s sample, except that, in comparison, this sample tended to disagree more with items stating that their menopause would have a negative impact (2001).

A closer analysis of the MRQ questions revealed that the most negatively endorsed items were in the Timeline dimension. Vasomotor symptoms usually abate within a few months to a couple of years, but for some women, they can persist many years after the FMP (Col et al., 2009; Hunter et al., 2012). Despite some suggestions of a correlation between mother-daughter age of onset and experience of the menopause (Murabito, Yang, Fox, Wilson, & Cupples, 2005; Torgerson, Thomas, & Reid, 1997; Utz, 2011; van Asselt et al., 2004), there appear to be no fixed rules about either. The results of this study confirm that women tend to be uncertain about whether their menopause would be short or long, although many remained optimistic that, with time, their symptoms would improve.

There was a large spread of responses about whether going through the menopause had a negative impact on participants’ life, and, in general, women were unsure if this would be the case. Generally, they felt that the menopause did not change the way others saw them, although it affected the way they saw themselves slightly more. Nonetheless, they did not feel less confident since going through the menopause. Overwhelmingly, they were pleased to no longer menstruate, a theme previously identified by researchers (Hunter, Gupta, et al., 2009; Pimenta et al., 2011b), and some were also relieved to be free from the risk of pregnancy (or possibly the need to control the risk of pregnancy). Whilst the responses on the New Phase subscale were generally positive, the idea of entering a new stage of life did not seem strongly associated with
the menopause. Perhaps, the concept of life transition taps into a more complex interaction of social events, such as transformation of the family unit or retirement, which may not have yet occurred for some women in the sample.

In general, women felt they were coping well with their menopause, but were slightly less confident about what they could do to manage problematic menopausal symptoms, especially in regard to self-management. As described in Chapter 3, the ongoing debate about HRT has created uncertainty, and likely anxiety, amongst women about how to best manage their symptoms. Whilst complementary and alternative medicine is increasingly popular, research has generally not supported its efficacy (North American Menopause Society, 2015). It is therefore not surprising that participants in this study did not feel fully empowered to manage their menopause.

No previous studies could be found for the purpose of direct comparison of the emotional menopause representation, but clearly, participants did not generally endorse negative emotions about their menopause. Certainly, they did not seem to be angry, upset or afraid about it, but they did however, express some worry or anxiety, and to a lesser extent some depressive thoughts. Whilst it is hard to determine the source of those emotions, it is possible that the unpredictable duration of symptoms, and/or uncertainty about treatment or more generally about the future, may play a role. Moreover, negative themes, highlighted in previous literature, such as perceived loss of fertility, decrease in libido and health decline (Delanoë, 2001a; Hunter, Gupta, et al., 2009; Pimenta et al., 2011b), may have been reflected by a portion of the sample.

The second question of Aim 1 focused on whether menopausal and cognitive representations were independent or correlated. The results show that the emotional representation was significantly and strongly correlated with the cognitive representation, and all cognitive dimensions were also strongly and individually correlated with the emotional representation. While the strengths of the correlations for each cognitive representation subscales were of a similar order, the effects were slightly stronger for the Control/cure and Consequences, implying that women who felt they had less control over their menopause, and/or perceived their menopause would have more negative consequences, were more likely to have stronger negative emotions about their menopause. Chou and Schneider (2014; 2012)
published correlation indices for associations between emotional representation and other cognitive representation dimensions. Similarly, the emotional representation was strongly associated with Consequences (and Identity), but only weakly with Control/cure.

Leventhal posited that cognitive and emotional illness representations are made simultaneously through parallel, but largely independent, processing, but also that “emotion can attach to and interact with both perceptual and abstract cognition”\(^\text{14}\) (2014, p. 123), supporting Mandler (1975)’s concept that emotions are embedded in meaning systems. Leventhal suggested that symptom memories form the core of schematic memory, with body sensations being the basic components of the schemas. Given that actual symptoms are under the control of the illness, not the individual, it can be assumed that a higher number of symptoms would be associated with weaker control over the illness, as well as stronger negative impact of the illness, which in turn would trigger stronger negative emotions. Affective reactions to events are determined, in part, by judgments of control (Brown & Siegel, 1988), and whilst research so far has not investigated this specific chain of events, the results of this study and those of Chou and Schneider, suggest that the emotions triggered by the menopause are strongly interconnected with symptomatology, controllability, and perceived outcomes.

The scores on the MRQ also show that all cognitive representation dimensions were significantly correlated, in line with Hagger and Orbell’s meta-analytic findings of SRM studies (2003). In this study, the strongest correlation, with a large effect size, was found between Control/Cure and Consequences. This was not the case in the Hagger and Orbell’s study, where those two dimensions were only weakly associated. The authors found that the strongest associations, in descending order, were between Timeline-Consequences, Identity-Consequences, and Timeline-Control/Cure\(^\text{15}\). Those relationships had medium effect sizes, which was also the case in this study. Hunter and O’Dea (2001) reported some intercorrelation indices when they validated the MRQ, and found that the strongest (medium) effect sizes were in the relationships between Identity-Consequences, and Identity-Timeline. The latter

\(^{14}\) Leventhal (2014) also believes that “emotion is attached more swiftly and perhaps more permanently to sensory and perceptual cognition than to abstract cognition” (p. 123).

\(^{15}\) NOTE: The dimension of Control/Cure in the MRQ is scored differently from the IPQ or the IPQ-R, used in most studies included in Hagger and Orbell’s meta-analysis. In the MRQ, lower scores on that dimension indicate less controllability, whereas, on the contrary, in the IPQ and IPQ-R, lower scores on Control/Cure reflect more controllability.
relationship was, in this study, the weakest. Hunter and O’Dea reported a small to medium effect size in the relationship between Control and positive change, which is assumed by the author to refer to the “New Phase” items and are part of the Consequences dimension. Chou and Schneider (2014) also reported moderate relationships between Identity-Consequences, Identity-Timeline, and Timeline-Consequences; Consequence-Control, in line with Hagger and Orbell’s meta-analysis, were only weakly associated.

Taken together, the results of this study highlighted some consistency with previous studies, but also some differences. First, it must be reiterated that, in this study, all correlations between the cognitive representation dimensions were significant, and this is in line with previous research, which has identified a pattern of correlations supporting construct and discriminant validity for the model (Hagger & Orbell, 2003). It is also consistent with Hagger and Orbell’s meta-analysis findings. Second, in the three studies mentioned above with which the current study can be meaningfully compared, as well as in this study, moderate relationships were consistently found between the dimensions of Identity and Consequences, indicating that participants tend to perceive greater negative impact when they identify more symptoms, whether for different illnesses or for the menopause.

What is not consistent with Hagger and Orbell’s meta-analysis and previous menopause studies, is the finding of a strong association between Control/Cure and Consequences (i.e., women who reported more control over their menopause perceived their menopause would have less negative consequences), although Hunter and O’Dea (2001) did find some moderate relationship between Control and a subscale of the Consequences dimension. The reason for the disparity with most previous studies is not clear, but the results of this study are supported by the Attribution Theory and the role of coping in mitigating the relationship between controllability and perceived consequences of illness. A meta-analysis of 27 studies by Roesch and Weiner (2001), which assessed the relations between causal attributions, coping, and psychological adjustment in individuals with physical illnesses or undergoing medical procedures, found that individuals with high attributions of controllability, as defined within the framework of Weiner (1985)'s attribution theory, tend to believe they have the power to overturn or minimise the negative impact of their illness and hold high expectancy for success. Those with such patterns of attribution tend to be more motivated to select the coping strategies that lead to better psychological adjustment. On the contrary, negative psychological behaviour is more likely to be found in individuals with stable and uncontrollable attributions (but not
uniformly internal or external), leading individuals to feel helpless and resigned, with low expectancy for change.

The third question of Aim 1 investigated differences in cognitive and emotional representations across menopausal stages. The hypothesis that menopausal representations would be significantly more negative for pre- and perimenopausal women than for postmenopausal women (H1) was mostly supported: pre- and perimenopausal women did not differ significantly in their perception of the menopause, but for the overall and emotional representations, women across both stages perceived the menopause as more negative than postmenopausal women. Perimenopausal women had a more negative cognitive representation than postmenopausal women, but premenopausal women did not. Furthermore, both pre- and perimenopausal women perceived that the menopause would have more negative consequences than postmenopausal women did, and perimenopausal women felt they had less control over their menopause than postmenopausal women. Together, these findings support the general hypothesis that the representation of the menopause improves as women transit from the perimenopause to the postmenopause and support previous menopause representation and attitude research findings (Ayers et al., 2010; Chou & Schneider, 2014; Delanoë, 2001a; Wilbur et al., 1995). Another notable finding is that women in the perimenopause stage had the least positive cognitive representation on all four dimensions, but premenopausal women had the least positive emotional representation.

There are a number of possible explanations for this finding. Firstly, these results could be understood in light of the affective forecasting theory, and, in particular, the role of impact bias, which proposes that individuals tend to overestimate their emotional reactions to future negative events (Wilson & Gilbert, 2003). Further statistical analyses also indicated that premenopausal women were the most likely to believe that the menopause would have a negative impact, and the least likely to believe it would offer relief, indicating that they might fail to consider advantages procured by the menopause, such as the termination of menses or being free from using birth control. Again, this may be also be consistent with another theoretical foundation of the affective forecasting theory, the focalism phenomenon, which hypothesises that individuals over-concentrate on negative events and fail to consider positive events that may occur in parallel.
On the other hand, an explanation as to why postmenopausal women tend to have more positive representations of the menopause may lie in a number of age-related cognitive and emotional processes. As individuals grow older, they tend to compensate for decline in cognitive-affect complexity, the ability and willingness to differentiate, experience and integrate positive and negative emotions, by developing affect optimisation, the ability to process information in a way that enhances positive affect and decreases negative affect (Labouvie-Vief, 2003; Labouvie-Vief & Medler, 2002). Thus, as individuals age and experience declines in cognitive-affective complexity, they tend to rely more on optimisation strategies. A longitudinal study of affect optimisation and affect complexity across the adult life span conducted by Labouvie-Vief and colleagues (2007) showed that, while, affect optimisation (and affect complexity) remained relatively stable for each participant during a six-year period, affect optimisation was found to most rapidly increase from early to middle adulthood, and plateau between the age of 60 and 70 (with possible increase again after the age of 80). It is thus possible that affect optimisation may partly explain why older postmenopausal women in this study reported significantly more positive emotional representations of the menopause than younger women, given the 20-year age span across this study sample. The concept of affect optimisation is also supported by socioemotional selectivity theory, which, in part, outlines a shift in emotional regulation with advancing age, resulting in a preference for positive information over negative information, including autobiographical information (Charles, Mather, & Carstensen, 2003; Mather & Carstensen, 2005).

Other explanations, specific to the menopause, may also be advanced for improved menopausal representations as women progress through the stages. As they transit through the menopause, women are likely to acquire increasingly efficacious coping strategies to deal with menopausal symptoms, and therefore gain increased perceived cognitive and behavioural control ability. In turn, increased self-efficacy is likely to positively affect menopausal representations. This logic is supported by a study conducted by Schüz and colleagues (2012), who studied the effect of illness and personal factors on illness representations in an older cohort suffering from multiple illnesses, and found that illness representations were partly a product of perceived self-efficacy.

A large body of research has been, and is still focusing on the link between the menopause and depression, but the menopause is fortunately no longer a psychiatric focus, as it was prior to the beginning of the 20th century. Negative stereotypes of menopausal women...
remain widespread, however (Marcus-Newhall et al., 2001). Humorous stereotypical images of “mad” or aggressive menopausal women are still easy to find on the internet, and it is not unusual to hear negative pleasantries about menopausal women in social conversations. The neutral or positive representations of the menopause certainly challenge cultural negative views of menopausal women, and, despite the importance Western society places on youthful images and values, women may not have fully internalised menopausal stereotypes after all. Nonetheless, findings that representations were more negative for premenopausal women than postmenopausal women suggest some degree of stereotype internalisation may be taking place before women enter the menopause. The limited dialogue between generations about the menopause (Agee, 2000; Utz, 2011; Vinel, 2008) may create a vacuum in which women seek and obtain information from social sources other than menopausal women themselves. In other words, it may be that the “dread” of the upcoming menopause is culturally influenced, and that first-hand experience somewhat mitigate negative views. This is an assumption nonetheless, and longitudinal research would be needed to determine whether individuals actually readjust their representations. Finally, it is difficult to assess how menopausal representations have been influenced by the ‘medicalisation’ of the menopause. Without generational data on menopause representations, it is not possible to assess if menopausal representations have generally improved or not over time, and, if they have improved, it would also be difficult to measure the contribution of the feminist movement in changing those representations. Whilst the medical model offers the best treatment options for women who have difficulties managing menopausal symptoms, a more holistic approach to the menopause that considers the numerous stressors that take place during middle-age, is certainly welcomed.

In summary, the results of this study are largely aligned with previous research. Vasomotor symptoms, sleep disturbance and urogenital symptoms were common complaints amongst the sample, however, depression and anxiety were not considered by the participants as being typically part of their menopausal “picture”. Women’s cognitive representations were, as previously reported in the literature, generally neutral or positive. The pattern of correlations found in the menopause representations were also, by large, in line with previous studies. What this study highlighted, however, is the strong relationships between the dimensions of Control/cure and Consequences, and, individually, their robust relationship with the menopause emotional representation. This implies that changing certain cognitions about the menopause is likely to have an impact on how women represent their menopause emotionally (and
consequently, shape emotional outcomes), which further supports the beneficial role cognitive-behavioural therapy can play in the menopausal experience. Finally, the hypothesis that representations would be more positive when women exit the menopausal transition as compared to when they enter the menopause was supported, implying that CBT may be particularly beneficial in the early stages of the menopause.

**Aim 2: Testing how cognitive and emotional factors interact with the menopause representation and vasomotor symptom appraisals**

The second aim of this research was to test a proposed cognitive model of vasomotor symptoms and, specifically, the interactions between cognitive/emotional factors, the menopause representation and three measures of hot flushes and night sweats. A first preliminary question focused on whether women possess vulnerabilities specific to the menopause. Several hypotheses proposed in the process of constructing the model were then tested before the overall model was assessed using path analyses.

**General or VMS-specific cognitions?**

The first question within this aim focused on whether women possess vulnerabilities that are specific to the menopause, and to the author’s knowledge this is the first time general- and VMS-specific cognitions have been compared. The first hypothesis that women who tend to catastrophise generally also tend to catastrophise about their hot flushes ($H_2$) was supported. The correlation between the two types of cognitions was significant, although the effect size was small to medium. The second hypothesis that women who hold strong control beliefs generally also hold strong beliefs about how they can manage their vasomotor symptoms was also supported; this time the effect size was medium to large.

Reynolds (2000), the author of the Catastrophic Thought Questionnaire for Hot Flushes, found a large spread of responses in her sample of 57 women experiencing hot flushes, with some endorsing very few of the items, and others endorsing many. In this study, this was not the case: the majority of women endorsed few items (75% scored 14, or under, out of a possible total of 75), and very few obtained high scores (only 3.3% scored above 40). On the other hand, the scores for general catastrophic thinking showed a greater spread. Reynolds compared her sample with patients suffering from rheumatoid arthritis and found
comparable scores, concluding that “catastrophic thoughts are shaped more by personal styles of thinking than by health symptoms alone” (p. 120), consistent with the correlation findings in the current study, although caution should be applied, given the small effect size. This implies that exploring correlations between general- and specific catastrophising cognitions, for instance in a CBT framework, may need to take into account understanding the specific characteristics of the individual.

The correlation for control beliefs was much stronger, indicating that women tend to transfer personal styles about control when experiencing hot flushes. In an analysis of relationships between perceived control and women’s reported VMS coping strategies, Reynolds (1999b) found that women high in self-rated control used a larger range of coping strategies to manage their discomfort. Of note, Reynolds found that distress was more related to attitude to coping than the actual coping behaviour per se. Perhaps women with higher self-rated general control develop more positive beliefs about their ability to cope with events, and apply the same positive beliefs to their menopausal experience. Those women may be more inclined to try a range of coping strategies in different facets of their life, and build enough confidence to try different strategies to manage their menopausal symptoms. During therapy, it may therefore be useful to not only explore general and specific self-rated control beliefs, but also how those beliefs relate to their approach to coping.

Without psychological intervention, catastrophic thinking about hot flushes tends to diminish over time, but the relationship between a tendency to have catastrophic thoughts and a tendency to experience distress during flushing remains (Reynolds, 2000). No similar research about control beliefs could be found, but it is likely that many women hold increasingly stronger control beliefs as they transit through the menopause and are able to try and test different coping behaviour. Therapeutic work could therefore not only be strengthened by broadening VMS-specific cognitions to more general cognitions, but also by passing on the information that women usually learn new coping skills with the passing of time, hold more positive attitudes towards their menopause and experience less distressing symptoms.

**Individual model hypotheses**

The testing of the proposed cognitive model was preceded by a series of hypotheses that served to instruct the construction of this model. Hunter and colleagues (Hunter & Liao, 1995; Hunter & Mann, 2010)’s previous work, and in particular Hunter and Chilcot’s cognitive
model of menopausal hot flushes and night sweats (2013), Leventhal’s Self-Regulation Model, cognitive theories, and the literature review of psychological and emotional factors linked to VMS presented in Chapter 4 largely informed these hypotheses. To facilitate reading, the individual hypotheses are grouped into four categories: 1. direct effects of cognitive/emotional factors on VMS bothersomeness and reported frequency, 2. the mediation analysis examining the relationships between depressive symptoms, negative affect and menopause representation, 3. relationships between the menopause representation and the three measured VMS appraisals, as well as relationships amongst these measures of VMS appraisal, 4. individual pathways testing if the menopause representation mediated the relationship between cognitive/emotional factors and the three measured VMS appraisals.

First, the direct effects of cognitive/emotional factors to bothersomeness and perceived frequency of vasomotor symptoms were tested. The hypothesis that catastrophic thinking, control beliefs, negative affect, perceived stress and body consciousness would predict HF/NS bothersomeness ($H_3$) was only partially supported. Perceived control and catastrophic thinking did influence HF/NS bothersomeness, but negative affect, perceived stress and body consciousness did not. The hypothesis that anxiety sensitivity would lead to heightened perceived HF/NS frequency ($H_4$) was not supported.

Few researchers have studied the direct effects of transient and stable psychological factors on vasomotor symptom appraisals. Amongst those, Hunter and Chilcot (2013) tested the effects of depressed mood and anxiety, somatic amplification, optimism and perceived stress on flushes problem rating as well as frequency, both subjectively and objectively recorded. Neither problem rating of hot flushes nor objective frequency were predicted by any of the proposed factors, however, subjective frequency of flushes was directly influenced by somatic amplification and optimism.

The absence of direct effects between negative affect and VMS bothersomeness in this study parallels the absence of direct effects between depressive mood and VMS problem rating found in Hunter and Chilcot’s study. Yet, in both studies, those psychological factors correlated significantly with the extent to which symptoms were bothersome or problematic. It can be therefore suggested that the link between depression and VMS may be better explained by the impact VMS have on mood, rather than the other way around.
In regard to perceived stress, again, this study supports Hunter and Chilcot’s findings that stress does not play a direct role in the evaluation of VMS bothersomeness. Yet, similarly to the above findings, in both studies, perceived stress was significantly related to bothersomeness of flushes. In laboratory studies, the impact of induced stress on flushes frequency has been reported for objectively measured flushes, but not for subjective measurement of frequency (Swartzman et al., 1990). On the other hand, subjectively reported stress seems to be followed by reduced report of objectively measured flushes and increased subjectively measured flushes (Thurston et al., 2005). Together, these findings suggest that perceived stress leads to increased perceived flush frequency, but not increased bothersomeness. Given the significant link between perceived stress and bothersomeness, it can be suggested, similarly to the point made above, that bothersome flushes may be more likely to directly induce perceived stress rather than stress inducing bothersome flushes.

In this study, body consciousness was found to be significantly correlated with flush bothersomeness, but, again, there was no direct effect from the former to the latter. Disparaging and self-deprecatory thoughts during flushes have been previously reported (Hunter & Liao, 1996; Reynolds, 1997b), and negative perception of self has been strongly associated with reported distress during flushes (Hunter & Liao, 1996; Reynolds, 2002a). In particular, many women have described high levels of embarrassment, shame and humiliation, and appraised themselves as “unattractive” when experiencing flushes (Reynolds, 1997b, 2002a). Women with high body satisfaction have been found to have more positive attitudes towards the menopause and fewer reported symptoms; conversely lower body satisfaction is linked to more negative attitudes (Bloch, 2002; Rubinstein & Foster, 2013). The findings of this study suggest that either distressing flushes increase thoughts of unattractiveness through heightened body consciousness, or body consciousness has an indirect effect via menopausal beliefs. Of course, the two possibilities are not incompatible.

Control beliefs and catastrophic thinking had strong direct effects on flushing bothersomeness, and together they explained 51.4% of the variance of bothersomeness. Perceived control was a particularly strong predictor, with less perceived control leading women to experience more bothersome symptoms. Control beliefs about flushes relate more to perceived control over feelings during flushes than perceived control over physical onset flushes, and regression analyses have previously shown that lower control beliefs account for more variance in flush distress than flush frequency does (Reynolds, 1997a). For the testing of
this hypothesis, perceived frequency was not considered as a predictor, but the results indicate that the perception of control over flushes is an important factor in the appraisal of flushes. This is in line with the findings from randomized controlled trials seeking to identify the effectiveness of CBT for vasomotor symptoms, and which found that control beliefs mediated the effects of CBT on VMS problem ratings (Chilcot, Norton, & Hunter, 2014; Norton et al., 2014). The Perceived Control over Menopausal Hot Flushes (Reynolds, 1997a), the scale used in this study, mostly relates to women’s control over the management of and coping with flushes. Most women consider the onset of their flushes as unpredictable, and many report that a sense of helplessness is the most distressing factor in the experience of VMS (Reynolds, 1997a). The fact that perceived control over management and coping with flushes strongly predicts the qualitative experience of flushes is clinically relevant to the management of VMS, and treatment strategies that bolster this type of control beliefs (e.g. thought monitoring and cognitive restructuring) should be part of cognitive behavioural therapy for hot flushes and night sweats, as suggested by Hunter and Smith (2013).

Not surprisingly, catastrophising about hot flushes also predicted more bothersome flushes, supporting Reynolds’s findings that women who tend to catastrophise hold weaker control beliefs and experience more distressing VMS (2000). As seen in Chapter 4, catastrophising relates to a “mental set” which implies anticipating the worst outcome for an event, and is strongly related to trait anxiety (Davey & Levy, 1998; Whaley et al., 1999). Catastrophic thinking is often associated with a sense of helplessness and panic during the flushing, which enhances the distress experienced (Reynolds, 1997b). The author of the current study proposed a model of physiological and psychological flushing amplification pathways (see page 77) by which catastrophic thinking may increase both the qualitative and quantitative experience of VMS: hot flushes activate catastrophising thoughts, which, in turn, trigger negative appraisal of the self and the event (e.g., helplessness, fear of social criticism, fear of passing out, etc.), which then leads to increased distress. Physiologically, increased negative appraisal may also lead to increased sympathetic activity (e.g., increased stress or blushing) and consequent increased body temperature, which, in turn, may prolong flushing. Psychologically, increased negative appraisal may enhance the fear of flushing, leading to either hypervigilance to VMS, and/or avoidance, which, in turn, negates positive coping and increases flush distress. Whilst this study did not specifically test these suggested pathways, its findings, however, lend support for the direct effect of catastrophic thinking on the negative experience of flushing.
Again, this has great clinical relevance: CBT, for instance, through challenging pessimistic thoughts about outcomes, has been shown to have long-lasting reductions in impact of catastrophic thinking in pain studies (Wideman & Sullivan, 2011), and it is likely that these interventions can also be applied to menopausal symptom management. Lazarus and Folkman’s transactional model of stress, which proposes that individuals facing a threat, make both a primary appraisal about the threat valence, and a secondary appraisal about their coping capacity, has been used to conceptualize the processes used in CBT interventions aiming at reducing pain catastrophising (Main, Sullivan, & Watson, 2008). In the context of CBT for menopausal symptoms, both the maladaptive primary appraisal of the threat through magnification and rumination about flushing, and the secondary pessimistic appraisal of coping (e.g., panic or helplessness) could be challenged. Given the strong correlation between low control beliefs and high catastrophic thinking, secondary appraisal challenging could occur concurrently for both cognitive vulnerabilities. Furthermore, the results highlighted earlier in relation to general and VMS specific cognitions (see $H_2$), suggest that challenging thoughts beyond those specific to flushing may have a synergistic effect.

The last prediction in this group of hypotheses focused on identifying whether anxiety sensitivity had a direct effect on perceived VMS frequency, and this was not supported. Hanisch and colleagues (2008) compared panic attacks and VMS across several domains and proposed that “people with elevated anxiety sensitivity would report greater symptomatology as a result of their heightened apprehension of arousal symptoms during thermoregulation” (p. 261). Findings from the current study would not support this. The results of this study also go against previous empirical findings indicating that somatic amplification predicted the frequency of subjectively measured flushes (Hunter & Chilcot, 2013; Hunter & Haqqani, 2011; Thurston et al., 2005). Somatic amplification and anxiety sensitivity share the concept of hypervigilance to bodily sensations, and both are influenced by personality traits, such as anxious disposition (Duddu, Isaac, & Chaturvedi, 2006; Hanisch et al., 2008). However, whereas the former focuses on the experience of somatic sensations as intense, noxious, and disturbing, the latter implies that the person fears anxiety-related physical sensations and holds the beliefs those have harmful consequences. Clearly, anxiety sensitivity is central to panic disorder, in which the fear of physiological sensations plays a cascading and perpetuating role in panic attacks. The finding of this study, however, stops short of supporting Hanisch and colleagues’ attempt to parallel panic attacks with hot flushes and their assumptions that anxiety sensitivity would play a similar predictive function in increasing symptomatology. It
is likely that the central tenet of fear of bodily sensations associated with AS does not apply to the experience of VMS, at least not to the reported frequency of flushing.

Second, in line with the mood-state dependence hypothesis proposed by Miranda and Gross (1997), it was predicted that depressive symptoms would influence negative affect, which in turn would influence the menopause representation (Hs). This was only partly supported. Depressive symptoms did predict negative affect, but the latter did not predict the menopause representation, and the relationship between negative affect and the menopause representation was not mediated by negative affect. Consequently, both depression symptoms and negative affect were considered independently for the testing of the model.

The mood-state hypothesis suggests that dysfunctional beliefs are activated in people vulnerable to depression when they experience negative mood. In a first untested cognitive model of vasomotor symptoms, Hunter and Mann (2010) proposed that depression would influence somatic amplification via the mediation of negative affect. The model was partly assessed by Hunter and Chilcot (2013), but this mediation pathway was not included. The authors’ hypothesis, however, that depressive mood would influence HFNS beliefs, which in turn would influence HFNS problem rating was not supported in this study. The results further indicate that, while, unsurprisingly there is a link between depressive symptoms and negative affect, the latter does not seem to impact upon menopausal beliefs.

One suggestion to explain this is that transient mood does not influence women’s core assumptions about the menopause. This, however, would suggest that these assumptions are stable, yet, as seen earlier in this discussion, beliefs about the menopause are fluid, and evolve as women transit through the menopausal stages. A second suggestion is that menopausal beliefs do not require significant systematic cognitive processing, to which negative affect is particularly sensitive (Armitage et al., 1999). Yet, this is not supported by several researchers who found that illness beliefs are indeed influenced by affect infusion (Croyle & Uretsky, 1987; Salovey & Birnbaum, 1989). Perhaps, a third explanation can be derived from the fact that sad mood has been found to decrease inductive reasoning, but not deductive reasoning (Palfai & Salovey, 1993). Induction allows for the incorporation of new beliefs, whereas deduction draws out implications from what is already believed (Evans & Over, 2013). This implies that negative affect
may not allow for the readjustment of some already formed beliefs. Menopausal beliefs likely start forming prior to the onset of the menopause, and whilst they have amenable properties during the menopause experience, they may not be sensitive enough to be altered by the mere effect of mood. This, of course, partly negates the mood-state hypothesis, the basis upon which this study hypothesis was built. This study results, and the results highlighted formerly by Hunter and colleagues reveal that, while the strong relationship between mood and cognition is not in doubt, the relationship between negative mood and menopausal beliefs is complex and still warrants further exploration.

Third, the direct effects of the menopause representation on flushes appraisal were evaluated, as well as the relationships between the study three measures of flushes appraisal. The reader is reminded that, for Aim 2 (and Aim 3), the menopause representation included both cognitive and emotional components of the representation. The prediction that women with a more negative representation of the menopause would perceive having more frequent and more bothersome flushes was supported (H6). The hypothesis that perceived frequency of flushes would predict bothersomeness was also supported (H7). It was further hypothesised that both perceived frequency of flushes and bothersomeness would influence interference to participants’ daily functioning across several domains (H8). This was partly supported: bothersomeness did predict interference, but perceived frequency of flushes did not. A trimmed cognitive model incorporating the different relationships between the variables (including the impact of antidepressants on the menopause representation and interference) was found to have an excellent fit.

To the author’s knowledge, this is the first study evaluating the relationships between the menopause representation and three types of VMS appraisal. Hunter and Chilcot (2013) evaluated the relationships between HFNS beliefs, frequency and problem rating, but did not incorporate interference into their model. The authors found that HFNS beliefs weakly correlated with subjectively measured flush frequency and strongly predicted HFNS problem rating, which was also weakly predicted by flush frequency. The results of this study parallel these findings. VMS bothersomeness was strongly predicted by the menopause representation, but less by VMS frequency.

The menopause representation also moderately predicted VMS frequency, but it only explained a relatively small amount of variance (14%) in flush frequency appraisal. Whilst it
seems logical that physiological flushing would predict the perception of flushing, we know from previous studies that objectively measured flushes do not correlate neatly with subjectively measured flushes (i.e., night sweats are typically under-reported, as are mild to moderate flushes), and that a high degree of unexplained variance is associated with physiological measures (Hunter & Haqqani, 2011; Mann & Hunter, 2011; Rand et al., 2011). Some actual flushing most certainly influences the frequency of self-reported flushing, but it is likely that other factors, including psychological factors, also affect how frequency of flushing is perceived and reported. This particular issue will be addressed again in the limitations section.

A novel finding in this study is that both the menopause representations and bothersomeness predicted daily interference due to VMS; frequency, however, did not. It is surprising that frequency was not found to statistically impact upon interference, though the two were moderately correlated. Previous research on factors influencing HF interference had been inconsistent, with one study finding that subjective HF frequency strongly predicted interference, but HF severity did not (Carpenter & Rand, 2008), and another showing that both HF frequency (as measured by frequency factor combining diary, monitor and button methods) and HF severity impacted on interference (Rand et al., 2011). While this study supports the former research, it is not consistent with the latter, which may be explained by the fact that the frequency factor incorporated objective measures. This emphasises the importance of differentiating between subjective and objective measures of HF frequency when the impact on HF interference is evaluated. Nonetheless, it seems that, when interference with daily life is considered, the perceived number of daily flushes is less important than the distress they generate.

To conclude the discussion on this set of hypotheses, it is relevant to note the large amount of variance explained in the model, 43% for HF bothersomeness and 59% for HF interference. For bothersomeness, the menopause representation explained a large part of the variance, but for interference, bothersomeness made by far the largest contribution. Consistent with the studies mentioned above, this study highlights that psychological factors play a pivotal role in the appraisal of flushes.

Fourth, the last hypothesis of Aim 2 focused on whether the menopause representation mediated the relationships between the cognitive/emotional factors (namely, anxiety sensitivity, body consciousness, depressive symptoms, negative affect, catastrophic thinking, control
beliefs and perceived stress) and the three measures of flushes appraisal ($H_0$). All mediation pathways were tested individually, and, in support of the hypothesis, each of those pathways was significant. Individually, and together, these results clearly highlight the pivotal role of the menopause representation in the relationships between women’s emotional and cognitive vulnerabilities and their experience of vasomotor symptoms.

The assumption that HF beliefs may mediate the relationship between psychological factors and HF problem rating was tested by (Hunter & Chilcot, 2013), who found significant pathways for somatic amplification, anxiety and stress; the mediation pathways for depressed mood and optimism were not found to be significant. The mediations were tested as part of a model, not individually, as in this study hypothesis, and other factors were considered, which may explain why some results were statistically not significant. Nonetheless, the results of this study extend Hunter and Chilcot’s findings, by confirming the significant role played by the psychological evaluation of the menopause in the experience of VMS.

In general, the mediation pathways in this study were stronger for bothersomeness and interference than they were for frequency. While this is not surprising, given that a significant part of variance in perceived frequency is likely explained by the actual event of flushing, it does highlight the fact that psychological vulnerabilities play a role in how women either perceive and/or report frequency of flushing, although this is most true when the menopause representation is considered. Of further interest are the findings that negative affect, body consciousness and perceived stress, which had no direct effect on bothersomeness, as discussed earlier, did influence how women rated their symptoms through the way they conceptualise their menopause. In other words, those vulnerabilities alone are not enough to impact upon the experience of the vasomotor symptoms, but do have an effect when menopausal beliefs are considered.

Another salient point in the results is that, except for negative affect, full mediations were found for interference, meaning that the emotional and cognitive factors all directly and indirectly influenced daily interference due to VMS. Catastrophic thinking and control beliefs, as seen earlier, were the only factors to have a direct effect on bothersomeness, and, out of all the factors, they had the strongest direct effects on interference. This highlights, again, the importance of specifically addressing catastrophic thinking and beliefs of control in a therapeutic environment.
Testing of the cognitive model of vasomotor symptoms

The relationships between all the variables mentioned above were evaluated in a model that was tested for best fit. The final trimmed model, which retained an excellent fit, identified redundancy in several cognitive and emotional factors, namely anxiety sensitivity, negative affect and body consciousness. The control variables entered in the model (education, BMI and the use of antidepressants) were also redundant. The remaining factors were found to influence the menopause representation: women with higher catastrophic thinking, weaker control beliefs, more depressive symptoms and reporting heightened stress conceived the menopause as being more negative. Together those four factors explained a large amount of the variance of the menopause representation (45%). Control beliefs and catastrophic thinking remained direct predictors of bothersomeness, together explaining an additional 16% of variance in bothersomeness (i.e., beyond the variance explained by the menopause representation and frequency). Catastrophic thinking and perceived stress also influenced interference directly, and explained a further 6% of the variance of interference, beyond that explained by the menopause representation and bothersomeness. As expected, the relationships between the menopause representation, bothersomeness, frequency and interference remained unchanged, although the strength of the relationships tended to diminish due to the added factors.

Several similarities and differences can be noted between the results of this study and those reported by Hunter and Chilcot (2013) - the reader is reminded that Hunter and Chilcot’s study participants were partly recruited in medical clinics and experiencing problematic HF. Both studies found that perceived stress and anxiety factors (catastrophic thinking in this study) influenced how women represented their menopause. Hunter and Chilcot’s model, however, did not find significant pathways for depressive mood, and this factor was made redundant. In this study, depressive symptoms remained an influential factor upon the menopause representation. Both studies highlight the significant role of the menopause representation (or menopausal beliefs) in the experience of vasomotor symptoms. Hunter and Chilcot concluded that “psychological factors mainly impact upon symptom perception and cognitive appraisal, rather than on HFNS at
the physiological level” (p. 311). Evidently physiological measures of VMS were not part of the current study, thus comparisons at this level cannot be made. Results, however, clearly show a strong impact of psychological factors upon the qualitative appraisal of VMS (i.e. bothersomeness and interference) and the quantitative appraisal of VMS (i.e. self-reported frequency). Hunter and Chilcot found that two factors weakly influenced self-reported frequency of VMS, optimism and somatic amplification. In this study model, no factor, apart from the menopause representation, directly impacted upon the frequency of flushing. Given the low concordance of objective and subjective measures of VMS, the question about what may influence women in how they report flush frequency remains open.

In summary, women who tend to catastrophise about general events tend to catastrophise about flushing. Similarly, women who hold strong control beliefs about events in their life also hold strong control beliefs about their ability to cope with vasomotor symptoms. Catastrophic thinking and control beliefs emerged as strong predictors of the menopause representation and bothersomeness. Catastrophic thinking, as well as perceived stress, also predicted interference. In the tested model, depressive symptoms significantly predicted the menopause representation, but the relationships between depressive symptoms, negative affect and the menopause representation remains perplexing, as has been found in previous studies, and warrants further exploration. Anxiety sensitivity and body consciousness appeared redundant variables in the experience of flushing, and perhaps the constructs they are measuring do not apply well to the menopausal experience. As predicted, the menopause representation influenced how women self-reported their flushing on all three measures of VMS. Self-reported frequency predicted bothersomeness, and while bothersomeness predicted interference, frequency did not.

The menopause representation appears to play a pivotal role in the experience of vasomotor symptoms, and individually mediated the relationships between each tested variable and all three VMS measures. The tested model further emphasised its important role in the experience of flushing. Addressing the meanings that women attribute to the menopause seems intuitive, especially in the early stages of the climacteric, when those meanings may be constructed more negatively than in the later stage. In term of therapeutic strategies, focusing on how women may catastrophise about symptoms and the beliefs they hold, is likely to have
beneficial effects. This may be done through challenging and restructuring cognitions held over general events or over specific cognitions about flushing.

**Aim 3: Testing how behavioural coping strategies interacts with cognitive and emotional factors, the menopause representation and vasomotor symptom appraisals**

The third aim of this research was to test a final integrative cognitive-behavioural model that incorporated behavioural coping strategies, and in doing so, explore the relationships between cognitive and emotional factors, the menopause representation, vasomotor symptoms appraisal and coping. As a reminder, the application of the SRM to the menopause has only been tested once by Chou and Schneider (2012), but the authors did not focus on vasomotor symptoms, and did not include specific behavioural strategies. Hunter and Chilcot’s tested model, while comprehensive, did not include any coping measures (2013). This final section of the discussion will start by examining the relationships of the model factors with one specific coping strategy: avoidance. The focus on behavioural avoidant coping is pertinent since the literature review highlighted its maladaptive role in relation to cognitive and emotional vulnerabilities, as well as the negative evaluation of vasomotor symptoms. Two hypotheses relating to avoidance coping were tested and are presented first. Thereafter, the discussion will focus on the indirect effect of coping on the relationship between the menopause representation and vasomotor symptoms. Results will be considered in relation to the SRM basic tenet that coping mediates the effects of illness representation on illness outcomes. Finally, the results of the testing of the final integrative cognitive-behavioural model of vasomotor symptoms will be discussed.

**Relationships between women’s emotional and cognitive profile, coping strategies and VMS appraisal**

*Exploration of avoidance coping*

The first prediction that anxiety sensitivity, catastrophic thinking, depressive symptoms and control beliefs will have stronger associations with avoidance coping than with other types of coping strategies (H10) was fully supported. In the case of avoidance coping, the relationships were moderate for control beliefs and anxiety sensitivity, moderate to strong for depressive symptoms, and strong for catastrophic thinking. On the other hand, for cooling and positive strategies, the relationships with those factors were in the moderate
to weak or very weak range. Specifically, the associations between cooling strategies and depressive symptoms and anxiety sensitivity were non-significant.

There is overwhelming evidence of a strong relationship between both anxiety and depression and avoidance coping across a range physical and mental conditions, with anxiety and depression predicting the adoption of avoidance as a coping style, and, in turn, avoidance maintaining anxiety and depressive symptoms (Barlow, Allen, & Choate, 2004; Bögels & Mansell, 2004; Clum & Knowles, 1991; Grant et al., 2013; Newman & Llera, 2011). The results of this study support at least the first part of this statement, and are in line with a meta-analysis conducted by Aldao, Nolen-Hoeksema, and Schweizer (2010) on emotion regulation across several psychological disorders, which noted moderate to strong effect sizes for the relationship between anxiety or depression and avoidance. Bosworth and colleagues (2003) investigated the coping styles and personality domains in relationship to stress associated with menopause in a sample of 170 women aged 45 to 54 years-old, and also found moderate to strong effect size in the association between neuroticism and avoidance coping.

The strong relationship between catastrophic thinking and avoidance coping is not surprising, and has a good theoretical basis, in that individuals who catastrophise overestimate the likelihood that events will be negative and have dire consequences. For example, the fear-avoidance model of pain proposes that catastrophising individuals experiencing pain tend to have heightened fear of the pain and pain anxiety (increased threat perception, arousal and defensive motivation), which leads to pain escape or avoidance, which, in turn, leads to disability and depression and serves to maintain the experience of pain (Vlaeyen and Linton, 2000, Asmundson et al., 2004). As such, cognitive-behavioural avoidance may explain why high catastrophising individuals who suffer from acute pain tend to develop a chronic pain problem (Leeuw et al., 2007). There is also evidence that pain related fear is associated with negative affect (Gheldof et al, 2006, Goubert et al., 2004) and anxiety sensitivity (Asmundson et al, 2000, Zvolensky et al, 2001), and it has been suggested that those vulnerabilities may also influence the fear-avoidance process (Leeuw et al., 2007). Certainly, the results of this study shows that negative affect, anxiety sensitivity and catastrophic thinking were all strongly correlated. Speculatively, it may be that women with high negative affect and anxiety sensitivity will tend to catastrophise more about flushes, which in turn will lead to more avoidant behaviour, which in turn may serve to maintain thoughts that flushes are distressing.
In clinical practice, identifying those stable traits, in parallel with the exploration of menopausal beliefs, is likely to help understand the cascade of cognitions that may lead to a negative experience of symptoms.

The second hypothesis predicted that high symptom identity, low control, chronic timeline and negative consequences would be associated with avoidance coping, and in turn avoidance coping would be associated with higher levels of HF/NS bothersomeness ($H_{11}$). The first part of this hypothesis was fully supported: women who identified more symptoms as part of their menopause, perceived they had less control, believed their menopause would last longer and would have more negative consequences also tended to report more avoidant behaviour when dealing with their flushes. The effect sizes were in the moderate range, except for timeline, which had a weaker association with avoidance. Leventhal’s model predicts that unhealthy cognitive and emotional representations are associated with negative coping strategies, which in turn are related to poorer illness outcomes, and that the opposite is true for healthy representations. Previous health research has further suggested the usefulness of combining illness beliefs into clusters to predict coping strategies and illness outcomes (Hagger & Orbell, 2003; Heijmans, 1998; Scharloo et al., 1998). The results of this study mirror the findings of Hagger and Orbell (2003) that higher symptom identification and more serious consequence beliefs are associated with using more negative coping, including avoidance. They are also in line with Hunter, Ayers and Smith (2011), the authors of the behavioural coping scale used in this study, who found that holding more negative menopausal beliefs was linked to using more behavioural avoidance.

The results, however, are contrary to Chou and Schneider’s findings that none of the representation dimensions (except for coherence) were significantly correlated with avoidance coping (2012). Unlike the flush specific scale used in this research (i.e., the Hot Flush Behaviour Scale), Chou and Schneider selected a general coping inventory, namely the Coping Inventory for Stressful Situations (Endler & Parker, 1990). While hot flushes are certainly perceived as stressful by many women, perhaps the scale used by these authors lacked specificity to allow for the detection of significant relationships. The authors did not identify this as a limitation in their publication, although previous research had previously recommended using situation-specific coping measures in SRM studies (Hagger & Orbell, 2003; Hale et al., 2007; Leventhal et al., 2008). This is particularly regrettable, given that a shorter version
of the CISS, the CISS: Situation Specific Coping (Endler & Parker, 1999) is available, and includes the possibility to modify responses for a given stressful situation.

The second part of this hypothesis was also supported: choosing avoidant behaviour relationship was moderate to strong. Again, these results are similar to Hunter, Ayers and Smith (2011)’s findings, which showed that avoidance behaviour was associated with negative beliefs about flushing in social context and more problematic symptoms. Incidentally, in this study, avoidance coping had an even stronger relationship with interference, although only a weak relationship with frequency. It is possible that the perception of experiencing more frequent flushes leads to more situational avoidance, but it is difficult, at this stage, to determine whether more bothersome or interfering symptoms lead women to avoid situations in which symptoms may intensify, or whether the avoidance of these situations leads to more distressing symptoms. The next section attempts to tease some of these issues apart. Nonetheless, the associations found between avoidance and poorer outcomes reflect other researchers’ findings that avoidant coping is associated with higher levels of impairment in physical and social functioning, mental health and vitality (Heijmans, 1998; Rutter & Rutter, 2007; Scharloo et al., 1998).

As would be expected, positive coping was associated with more positive VMS appraisal (as measured by bothersomeness and interference with daily life), but, interestingly, the pattern of relationships for cooling and all three measures of VMS appraisal mirrored the pattern of relationships for avoidance: the more cooling strategies used, the more negative the appraisal. Of course, women with more frequent or bothersome flushes are likely to take action to cool down more often, but the suggestion by Hunter and Mann (2010) that carrying around or frequently using cooling devices, such as fans or wet wipes, may actually reinforce distressing thoughts about flushing should not be dismissed. Similarly to safety behaviour prolonging anxiety, the authors proposed that avoidance of situations that may lead to embarrassment or restrictions of activities normally enjoyed would not allow women the opportunity to disconfirm negative self-evaluation. This is particularly relevant, given that women may overestimate the negative perception of others during flushing (Smith et al., 2011). Certainly, the parallel findings for cooling and avoidance in this study suggest the possibility that those two types of strategies may have similar mechanisms of action.
Although avoidance is a relevant coping behaviour to focus on due to its association with maladaptive beliefs and outcomes, it is important to note that, in this study, very few women used it as a coping strategy, and none used it exclusively. In fact, while many women tended to use one approach to deal with flushes (usually positive behaviour), one third of the sample used a combination of strategies, overwhelmingly a mix of positive and cooling behaviours. Published menopausal research on coping seldom reports descriptive statistics beyond means, so it is difficult to assert the “normality” of this sample in regard to combinations of strategies. Nonetheless, results from previous studies also suggest that avoidance is the least endorsed form of coping (Bosworth et al., 2003; Hunter et al., 2011). The SRM proposes that individuals conduct a constant re-evaluation of the effectiveness of the coping strategies they use, thus it is not surprising that many women use several strategies concurrently (and also likely successively).

Finally, and although this was not hypothesised per se, it is interesting to note that each dimension of the menopause was significantly correlated with each measure of flush appraisal (frequency, bothersomeness and interference) in such a way that a more negative menopause representation was associated with a more negative evaluation of flushes, and the strengths of those relationships were moderate to strong. Again, these results support Hagger and Orbell (2003)’s conclusion that serious consequences, chronic timeline and strong identity are associated with maladaptive outcomes. They also add to the evidence provided by Hunter and colleagues that beliefs about the menopause are closely related to the experience of flushing.

*The role of coping: Direct or indirect effects*

The hypothesis that the direct effects between menopausal representations and VMS appraisal will be stronger than the indirect effects via coping (H12), as suggested by Hagger and Orbell’s meta-analysis conclusion, was supported. The results in Model 2 (MR-Coping-VMS appraisal), which tested this hypothesis (see Results Section - Table 16), clearly showed higher standardised estimates for the direct effects between the menopause representation and VMS appraisal than the indirect effects via coping. This was the case for both significant and non-significant mediations16. In other words, while coping generally

16 Non-significant mediations were the mediations for VMS frequency and the mediation testing the relationship between the menopause representation, positive strategies and VMS interference.
mediates the relationship between beliefs held about the menopause and the VMS experience, the impact of beliefs upon the VMS experience is strong, and the role of coping is minimal in this relationship. These results support the findings presented above, and previous work published by Hunter and colleagues. These findings have important theoretical implications, as a cornerstone of the SRM is that coping plays a strong mediation role in the relationship between illness representation and illness outcomes. Dempster and colleagues (2015) noted in their review that the role of coping is not operationalized consistently across studies, and that, sometimes, it is treated as a covariate, while at other times as a mediator. They further concluded that more clarity was needed about the position of coping in relation to illness perceptions. Hagger and Orbell (2003) noted that several illness studies have not supported the hypothesis illness representations → coping → outcome (Heijmans, 1998; Kemp et al., 1999; Scharloo et al., 1998), and their meta-analysis results did not provide evidence either to support the hypothesis of coping as a mediator. This said, several individual studies, either included in the analysis or published since, have supported the hypothesis, either fully or partially (Brown et al., 2007; Evans & Norman, 2009; Gould et al., 2010; Rutter & Rutter, 2002).

The SRM is a fluid model, which considers that the appraisal of illness outcomes feedback can modify both illness representations and coping, but, clearly, the idea proposed by Leventhal, Brissette and Leventhal (2003) that “Illness representations set the stage for coping” (p. 52) is not straightforward. It is indeed likely that individuals consider the physical, cognitive and emotional outcomes of their illness and adapt their coping strategies in response to those outcomes, just as much as coping strategies determine the outcomes of the illness. In the case of the climacteric, it seems that the beliefs held by women about the menopause have a stronger direct impact on vasomotor symptoms than they have on coping strategies.

Hunter and Man (2010)’s original cognitive model of menopausal VMS considered behavioural coping as an outcome of the cognitive appraisal of VMS (severity, distress and interference). The authors also accounted for the impact behavioural coping would have on menopause (or flushes) beliefs, as well as on mood. The model, however, did not take into account the direct effects of coping on the VMS experience. Hunter and Chilcot (2013)’s
subsequent publication, however, considered the direct impact of behavioural strategies on VMS in the discussion section, but this was not tested. As shown by the majority of the mediations in Model 2 of the current study being significant, those effects do indeed exist. This means that, while cognitive therapy can target menopausal beliefs, therapeutic intervention can also occur at the behavioural level in order to directly impact upon the VMS experience, with or without changing menopausal beliefs. This is important to note, given that changing individuals’ beliefs is often challenging and not always successful (David & Szentagotai, 2006; Longmore & Worrell, 2007).

**Final integrative cognitive-behavioural model of vasomotor symptoms**

The final part of the results section tested an integrative cognitive-behavioural model of VMS that incorporated all the study variables. In order to determine the best structure for this model, two competing models were assessed for best fit: MR-VMS appraisal-Coping (Model 1) and MR-Coping-VMS appraisal (Model 2). Consistent with the results discussed above, weaker fit indices were found for Model 2 than for Model 1, thus the structure of Model 1 was selected for the final integrative model. Despite a large number of distinct parameters (i.e., 53), this final model retained an excellent fit, as indicated in particular by the CFI and TLI indices.

All cognitive and emotional vulnerabilities entered in the model testing of Aim 2 were once again considered, and, for the first time, the direct relationships between those vulnerabilities and coping strategies were able to be tested. As expected, the associations between vulnerability variables (catastrophic thinking, control beliefs, depressive symptoms and perceived stress) and the menopause representations remained identical to those in the model tested in Aim 2, as did the relationships between the menopause representations and VMS appraisals. Results, however, showed that body consciousness, which did not have any direct effects on the menopause representations or the appraisal of VMS, did influence positive behaviour coping, which was also directly influenced by the menopause representations. Only three variables predicted the other two coping strategies: bothersomeness had direct effects on cooling strategies, while both catastrophic thinking and daily interference had direct effects on avoidance coping.
On the whole, this final integrative cognitive-behavioural model illustrates several associations, some novel, by highlighting the following: 1) menopausal representations play a central role in the experience of the menopause, 2) control beliefs are the strongest predictor of these representations, but also directly and strongly impact on how bothersome VMS are perceived to be, 3) catastrophic thinking impacts at all three tiers of the model, through shaping more negative menopause representations, contributing to increased perceived bothersomeness and interference, and leading women to select avoidance coping more often, 4) depressive symptoms and perceived stress also have some influence on menopausal representations, while the latter are also a predictor of how VMS interferes with daily living, 5) less body consciousness predicts the use of more positive behaviour in response to symptoms, and, 6) except for predicting positive behaviour, menopause representations do not impact directly on the coping strategies used by menopausal women, but do strongly predict the appraisal of symptoms, including perceived frequency.

Most of those results, including the relationships with cooling and avoidance coping, have been discussed in detail above and will not be repeated here. Of interest, however, are two novel significant associations revealed in this final model, namely the link between body consciousness and positive behaviour, and the link between menopause representations and positive behaviour, i.e., women who held healthier representations of the menopause and their body were more likely to employ positive strategies to manage their flushes. These associations may be explained by a common factor: participants who reported holding positive menopause representations, having a healthy body self-perception and using positive strategies to manage their flushes may have a general positive disposition towards self and events. Indeed, individuals scoring high on extraversion, conscientiousness, openness and optimism are likely to perceive events as challenges rather than threats, appraise their coping resources positively, and tend to choose engagement types of coping strategies (Carver & Connor-Smith, 2010; Penley & Tomaka, 2002). Unsurprisingly, optimistic menopausal women have been found to be more likely to engage in problem-focused rather than emotion-focused coping (Caltabiano & Holzheimer, 1999). Happiness and extraversion have also been found to positively correlate with better body esteem or appreciation (Stokes & Frederick-Recascino, 2003; Swami, Hadji-Michael, & Furnham, 2008), while wellness, a concept that integrates mind, body and
spirit well-being, has been associated with reduced body surveillance and body shame (Sinclair & Myers, 2004). Moreover, there is evidence that premenopausal positive mood may also impact on attitudes towards the menopause (Dennerstein, Lehert, Dudley, & Guthrie, 2001), and women with positive menopausal attitudes also tend to use lower body surveillance and have better body satisfaction (McKinley & Lyon, 2008; Rubinstein & Foster, 2013). In other words, a general positive disposition is not only key to the appraisal of one’s body, but may also contribute to developing positive cognitions about the menopause and responses to symptoms, which may buffer against prevailing stereotypes and negative attitudes towards menopausal women. Incidentally, whilst this model tested how symptoms determine coping rather than the contrary, it should be noted that the use of positive strategies was moderately associated with lower VMS bothersomeness and weaker interference to daily life.

**Section summary**

In summary, avoidance coping, whilst generally not a first choice of strategy used by the participants, was used more often by women who did not believe they controlled their HF well, were hypervigilant to and fearful of physical sensations, experienced depressive symptoms and, markedly, tended to catastrophise about the flushes. Women who also identified more menopausal symptoms, perceived those would have dire consequences, and to a lesser extent, thought those symptoms would last longer, also used more avoidance coping. In turn, participants who used more avoidance coping tended to report more distressing VMS, more interference and somewhat more frequent flushes (incidentally, the pattern of using cooling strategies was similar to that of using avoidance strategies). The direction of the latter relationships, however, is unclear, but it is likely that some bi-direction occurs. Those results were largely in line with previous literature on anxiety, avoidance and illness outcomes, including pain studies, as well as results highlighted by SRM research. The mediation role of coping between menopause representations and appraisal of flushes was also tested, and while mediations were found to be significant, it appeared that the menopause representations have a stronger impact on VMS appraisal than they have on coping strategies, suggesting the mediating role of coping is marginal. This was supported by comparing two mediation models for best fit, *MR-Coping-HF appraisal* and *MR-HF appraisal-Coping* with the latter yielding better fit indices. These results do not support the strong mediating role of
coping suggested by Leventhal and colleagues (2003), but are in line with a meta-analyses on SRM research conducted by Hagger and Orbell (2003). Finally, a tested integrative cognitive-behavioural of vasomotor symptoms, with excellent fit indices, was presented. This model highlighted that catastrophic thinking, control beliefs, depressive symptoms and perceived stress all influence the manner in which women represent their menopause, which in turn strongly impacts upon symptoms appraisals. Direct significant relationships between those cognitive and emotional vulnerabilities, perceived symptoms and coping behaviour were also found in the model, suggesting that, while menopausal representations are central to the experience of the menopause and can be targeted during CBT, attempts to change general or VMS specific personal cognitions should not be dismissed.

Strengths and limitations of the study

Strengths of the study

Until recently, the focus of menopausal symptom management has been primarily medical, but findings on some adverse effects of hormone replacement therapy (Bath & Gray, 2005; Rossouw et al., 2002) have highlighted the need for alternative treatment. The significant decrease of HRT use across the world (Canfell et al., 2008; De et al., 2010; Hoffmann et al., 2005), and the increased studies on non-hormonal therapy for vasomotor symptoms (North American Menopause Society, 2015) indicate women’s wish to use other types of treatment, and perhaps mark the beginning of a “de-medicalisation” of the menopause. Continuing on the limited, but important, work by previous psychologists, this research is timely. Specific strengths of the study are highlighted below.

Sampling method and sample size

An advantage of using randomly selected community sampling is that it is more representative of the general population than typically achieved when using clinical samples, and thus offers increased external validity (Howell, 2010). In menopause clinics, women tend to present with more health problems, life stresses and low mood, and likely skewed beliefs about their menopause (Hunter & Rendall, 2007). The number of demographic and health variables considered in this research was limited, but the fact that, except for a higher
reported level of education in contrast with the Australian Longitudinal Study on Women’s Health, no anomalies were found when comparing with other study samples increases the external validity of this research. The study response rate was relatively modest (31.4%), but not atypical of survey research. Nonetheless, due to the large number of questionnaires sent, the resulting sample size was also large (n = 517). Smaller subsamples were used for the analyses, in particular for the study models (n = 171), but the power analyses presented in Chapter 7 showed that their sizes were adequate for all the analyses.

**Encompassing model**

A major strength of the study is the large number of variables included, some novel. Indeed, no previously published studies have examined the experience of vasomotor symptoms that include the broad range of relevant variables investigated in the present study. First, seven distinct cognitive and emotional factors were considered. Previous SRM research on various illnesses has focused on more general personality dimensions, for instance the Factor-Five Model (Lawson et al., 2010), or personality types, e.g. neuroticism or Type-D personality (Feldman et al., 1999; Goetzmann et al., 2005; Mols et al., 2012; Williams et al., 2011). Conversely, the seven factors included in this study were carefully selected to reflect cognitions or emotions linked to the experience of flushing. Several similar factors had been considered by Hunter and Chilcot (2013) in their own model testing, i.e., perceived stress, somatic amplification, as well as depressed mood and anxiety, measured by the subscales of the Women’s Health Questionnaire. The use of the WHQ, although appropriate given it was developed to evaluate changes experienced by women during the perimenopause, has a limited number of items for the two variables in question, six for Depressed Mood and four for Anxiety/Fear. On the other hand, the CES-D used in this study allowed for tapping not only into depressed mood, but also depressive behaviours/somatisation, including impact on interpersonal relationships, thus providing a more detailed clinical picture. Furthermore, this study measured transient negative affect using the specific 20-item negative mood subscale of the PANAS.

This study also included anxiety factors that were found to be pertinent to the experience of flushing: catastrophic thinking and anxiety sensitivity. Reynolds (1997b, 2000) has carefully considered the impact of catastrophic thinking on cognitions and behaviours
relating to flushing, but catastrophic thinking has never before been included in a comprehensive cognitive model of VMS. Anxiety sensitivity assesses fear or worry about body sensations, whereas somatic amplification, a factor used by Hunter and Chilcot (2013), measures the attentional behaviour towards the body, rather than the anxiety it produces. Control beliefs have been discussed at length by previous researchers (Chedraui et al., 2010; Reynolds, 1997a, 1997b, 2002b; Thurston et al., 2005), but, again, never included in a cognitive model. Finally, body consciousness, has surprisingly received little consideration, given the evidence for perceived loss of attractiveness and shame often related by women during menopause (Hunter & Liao, 1995; Rendall et al., 2008; Reynolds, 1997b, 2002a). Its inclusion in the model was also a novel approach.

Another innovative approach to conceptualising VMS was the use of three measures to appraise the experience of flushing: perceived frequency, bothersomeness and interference to daily life. As discussed earlier, only two cognitive models of menopausal flushing have been tested and published. Chou and Schneider (2012) used general outcome measures, i.e. the Physical and Mental Health subscales of the Rand SF-36 Health Survey. Hunter and Chilcot (2013) measured objective and subjective hot flush frequency and problem rating; interference was not included. While the limitation of using subjective measures is acknowledged, the inclusion in this study of three distinct measures to assess flush appraisal not only permitted the examination of the relationships between them, but also how other factors in the model impacted upon them. This revealed that different factors act upon specific appraisals of VMS. For instance, catastrophic thinking influences the experience of VMS at two different stages (bothersomeness and interference), while control beliefs only influence bothersomeness, and perceived stress only interference.

Finally, this is the only model testing to have incorporated VMS-specific measures of behavioural coping by using the Hot Flush Behaviour Scale developed by Hunter, Ayers and Smith (2011). As mentioned several times, Chou and Schneider selected a coping scale that measures responses to stress, not specific responses to experiencing VMS. Conversely, the use of specific scales limits the possibility of confounding to occur, and allows for stronger inferences to be made. This is particularly important when using the theoretical framework of the SRM, as concluded by Hagger and Orbell (2003) in their meta-analysis of SRM studies.
Limitations of the study

Notwithstanding the strengths mentioned above, limitations in design, sampling and measurement need to be acknowledged. First, the method of this study presents the typical limitations inherent to cross-sectional research. First and foremost, this method cannot permit causality to be inferred, even though this study was grounded in robust theoretical frameworks. For instance, it is likely that depressive mood influences distress experienced during flushing, but also that distressing flushes increases depressive mood. Moreover, self-reported responses depend on the combination of psychological, sociological, linguistic, experiential and contextual variables, which may influence responses (Lanyon & Goodstein, 1997). Indeed, the assessment of cognitive and emotional constructs are particularly vulnerable to bias in self-report questionnaires, given that responses to items can be influenced by internal verbalizations or reflect a specific self-presentation style (Williams, Wasserman, & Lotto, 2003). Moreover, cognitions in regard to the constructs of this study (especially menopause representations and vulnerability factors) may derive from automatic processes, whereas more conscious, controlled processes are used in self-reported measures (Williams et al., 2003). Some scales are also more subject to response set distortion, meaning that respondents may consciously (or unconsciously) attempt to create a certain socially desirable response (Edward, 1953). Recall bias is also likely to have occurred, especially for the appraisal of flushes and other menopausal symptoms.

While using the RMHRS sample increased the external validity of the study, it also presented a shortcoming. The sample region was rural and did not include any major cities. Access to health services is more limited in rural Australia, and some studies suggest that rural residents have poorer general and mental health compared to their urban counterparts (Vines, 2011; White, 2003). Yet, a literature review of high prevalence mental health disorders in rural and urban locations by Judd et al. (2002) found limited support for a difference in prevalence rates, and suggested that, when differences were found, socio-demographic factors provided a better explanation than residence location. Nevertheless, this research focused on the synergy between biological markers, personality variables and schematic representations and, despite the specific settings of the participants, there is no reason to believe the relationships between these variables would be different for rural and urban participants.
A first limitation in regard to the variable measures relates to the absence of objective measurement for the frequency of vasomotor symptoms. Given that low concordance has been found between subjectively and objectively measured VMS (Mann & Hunter, 2011), it is possible that this research could have yielded different results had VMS been measured objectively. Nonetheless, considering the financial cost, complexity and cumbersomeness in using sternal skin conductance monitoring, it seems reasonable to use subjective measures in research with large samples. Self-reported measures of flush frequency are also appropriate in this study, given its focus on capturing women’s perceptions of and beliefs about the VMS experience.

Other limitations relating to the study scales concern the Identity dimension of the Menopause Representation Questionnaire and the Hot Flush Behavioural Scale. As mentioned earlier, while the wording of the Identity subscale of the MRQ is clear\textsuperscript{17}, it is impossible, when analysing the results to know whether a symptom was simply not experienced at all, or not believed to be part of the menopause. Participants may also have been mistaken in their responses. This is a minor issue, but one that continued to puzzle the author. The Hot Flush Behaviour Scale also presented some limitations due the impossibility to aggregate the subscales (likely leading to the internal consistency problems mentioned below). It is not uncommon to have separate subscales for coping; after all, they are meant to measure a range of disparate and often opposite behaviour. Dichotomised aggregates, such as positive and negative coping, however, would be useful for the purpose of simplified statistical analyses. Furthermore, the HFBS is a coping behavioural scale, and does not tap into the more complex constructs of cognitive or emotional coping. It was unfortunate that a validated scale focused on psychological coping in the context of VMS could not be found and included.

Another limitation to the study is that it used all five items of the HFRS. Hunter and Liao (1995), the authors of the scale, suggested that, in addition to the frequency factor, the HFRS had two factors: problem factor (Items 1, 2 and 3) and coping/control factor (Items 4

\textsuperscript{17} As a reminder, the MRQ stated: “Please rate to what extent you think the following experiences are part of your menopause by ticking: YES (part of my menopause), UNCERTAIN (whether part of my menopause) or NO (not part of my menopause)”.

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and 5). It was deemed, however, that the analyses would be enriched by using all five items for the VMS bothersomeness variable, rather than only the three items of the problem factor. As a precaution, analyses were performed using alternatively the three items (for problem factors) and the five items of the full scale. The results were almost identical and it was therefore decided to retain all five items in the analyses.

Although all scales used were carefully screened and further internal reliability analyses were performed for the study, several of those instruments have seldom been used by other researchers, and their psychometric properties were only just acceptable. For instance, the Hot Flush Behavior Scale (Hunter et al., 2011) was found to have relatively low internal consistency by both the authors of the scale and this study. Similar issues were found with the Perceived Control Over Hot Flush Index (Reynolds, 1997a) and the Objective Body Consciousness scale (McKinley & Hyde, 1996). Should interest from psychologists in the study of vasomotor symptoms increase in the future, it is likely that a wider range of instruments with more robust psychometric properties will be made available.

Finally, it must be noted that the study used a community sample, which overall held neutral to positive representations and did not present with any significant clinical anomaly, as measured by VMS experience or cognitive/emotional factors. It is therefore possible that statistical analyses using a sample with more severe symptoms may have yielded different results.

**Theoretical and clinical implications of the study**

**Theoretical implications**

The conceptual models reported in this thesis were grounded in Leventhal’s self-regulation theory, cognitive and emotion theories, as well as previous work undertaken by Hunter and colleagues (Hunter & Chilcot, 2013; Hunter & Liao, 1995; Hunter & Mann, 2010). This led to the proposal of a final integrative cognitive-behavioural model that encompassed relationships between selected cognitive and emotional factors, menopause representations, VMS appraisals and coping behaviour. The theoretical implications of this thesis are discussed in relation to Leventhal’s Self-Regulation Model of Illness and the Affective Forecasting Theory.
Leventhal and colleagues (1970; 1992; 1980) proposed that illness self-regulation operates via psychological ‘objective’ processes in parallel with ‘subjective’ emotional processes, and that these processes operate at each level of the model, i.e. representations of the health threat, coping strategies, and illness outcome appraisals. In an essay on integration of emotion and cognition, Leventhal (2014) set out to explain the complex relationships between emotional and cognitive parallel processing, and argued that the two systems operate independently, yet with high degree of interconnectedness. Testing this assumption is ambitious, and certainly not within the scope of this research, but the strong significant positive correlations found between cognitive and emotional representations lend support for relationships between the two systems.

In his essay, Leventhal reviewed both theoretical and experimental evidence to highlight how the two systems interact and integrate. Whilst he briefly described how illness schemata may be formed, he does not address how other factors, independent from the experience of illness, may impact upon those systems. The SRM accounts for both schematic and conceptual processes to play a continual role in processing illness information. Symptom memories form the core of schematic memory but, for the menopause, there is no prior history of experiencing symptoms (incidentally, this would be the case for any newly experienced illness). Schemata, therefore, at least for premenopausal women, and those just entering the menopause transition, must be constructed from other sources, such as contextual information from family, friends, media sources or medical practitioners. The current study provides evidence that other cognitive and emotional factors, such as catastrophic thinking or control beliefs, play an important role in addition to, or perhaps in interaction with, schematic and conceptual memories. This impact is not trivial and should not be dismissed, yet there is a paucity of research on how psychological factors, such as personality traits or transient mood, impact on representations.

Finally, the limited support for the mediation role of coping behaviours questions some of the theoretical underpinnings of the SRM. Leventhal and colleagues identified illness representations as a cornerstone for determining coping reactions to illnesses, and in turn, illness outcomes. Again, it seems this is not straightforward. On the one hand, significant mediations between menopause representations and VMS appraisals were found via the effect of coping in this study, but the effects were significantly stronger when the model was inversed, i.e. the model $MR-VMS$ appraisal-coping was statistically stronger than the model
**MR-coping-VMS appraisal.** As discussed earlier, the lack of support for the coping mediation hypothesis is in line with previous studies and the conclusion presented in Hagger and Orbell (2003)’s meta-analysis of SRM studies. Self-regulation is fluid, and implies malleability of cognitions, emotions and behaviours in response to revisions and adaptations, but the evidence presented in this study suggests that individuals, at least menopausal women, are more likely to adapt coping strategies in response to appraisal of symptoms rather than the other way around, although longitudinal studies would be needed to test this.

Leventhal (2014) suggested that “Repeated experience develops a rich cognitive domain, and the self is nested in a set of meanings involving the cause, symptoms, timeline, and consequence of the illness” (p. 148), and that illness schemata strengthen as individuals acquire more experience with the illness. This study did not support the latter assertion. On the contrary, although it did not test the theory per se, it lent more support for the affective forecasting theory (see Chapter 3 page 52 for more details) in finding that postmenopausal women’s beliefs were generally more positive than those of pre-and perimenopausal women. Individuals adapt to threats, and this is, after all, a central tenet of self-regulation, which predicts that individuals are “motivated to control, direct, and correct their own actions as they move toward or away from various goals” (Aspinwall, 2004, Abstract). Indeed, the SRM considers that representations generate targets for adaptive and efficient action, and allows for re-evaluation processes to occur at each level of the model (Leventhal et al., 1998). There are likely, however, large differences between individuals’ capacity to reconsider and adapt to negative events. This study did not test how individuals’ vulnerabilities impacted on the menopause representations at different stages of the menopause, but it is likely that psychological factors would influence how individuals change their beliefs as they adapt to the menopause. For instance, an individual with rigid cognitions or believing that her abilities and attributes are fixed and stable is likely to conserve similar representations across menopausal stages compared with another individual opened to new experiences or who believes her abilities and attributes are dynamic and malleable. Locus of control, level of resilience, optimism, and so forth, are also likely to affect how individuals alter their beliefs. In the case of the menopause, how long symptoms actually last (and there is, unfortunately, no way to know!) is also likely to have an impact.
Clinical implications

Numerous clinical suggestions and implications have been highlighted throughout the discussion of this study. First, a couple of useful findings were presented in this research that can be used for psycho-educational purposes. Nearly half the women surveyed (47%) did not link irregularity of periods with the menopause, and this highlights a gap between the STRAW+10 criteria used to determine the climacteric and lay beliefs. During the process of writing this thesis, the author found anecdotal support for this finding. The issue of the menopause was often discussed with middle-age acquaintances, and the author was surprised to hear many women did not associate the menopause with the cessation of menses. A common response encountered when asking if the interlocutor had gone through the menopause was “No, not yet”, often followed by the comment “I haven’t had my periods for a few years now” when in turn prompted about menses. Perhaps, in the mind of many women, the menopause is associated with flushes and other menopause-related symptoms, and in the absence of these symptoms, they do not perceive they have yet reached the climacteric. There are many websites providing good information about the menopause, but it seems more work is needed to disseminate accurate information to menopausal women. Given that the internet is increasingly used for searching health information (Eysenbach, 2000; Kummervold et al., 2008), this could be done, for instance, through increased use of plain, easy to understand information disseminated via health platforms available to health consumers, such as the Australian websites BetterHealth or eHealth, social media and search engines (Shapiro, 2016).

Nearly half the participants also believed that weight gain was directly linked to their menopause, although it is not considered a core symptom by clinicians, and it has been found not to be a result of the menopausal transition (Crawford, Casey, Avis, & McKinlay, 2000). Other factors, such as quitting smoking, dietary changes or increased sedentary lifestyle may better explain common weight gain during middle-age (Blanck et al., 2007; Brown, Williams, Ford, Ball, & Dobson, 2005; Mozaffarian, Hao, Rimm, Willett, & Hu, 2011). Weight gain is associated with poor body satisfaction and lower self-esteem (McLaren & Kuh, 2004; Tiggemann, 2004), but also, and importantly, increased health risks (Park et al., 2003; Rexrode et al., 1997). Weight management advice from medical or allied health practitioners could focus on shifting middle-age women’s perceptions about linking weight gain to the menopause to more the changeable factors mentioned above.
Second, the results of this research support Hunter and colleagues’ empirical findings in highlighting the pivotal role of cognitions in the experience of flushing (Hunter & Chilcot, 2013; Hunter & Mann, 2010), and may be used to extend their previous work on CBT for the management of vasomotor symptoms (Hunter & Smith, 2013, 2014). Flushing is influenced by cultural, social, cognitive and emotional factors that go far beyond the mere physiological phenomena. Tapping into the cognitive and emotional content relating to the menopause and flushing should be a clinical focus in order to improve the VMS experience. In particular, identifying and addressing the cognitive and emotional vulnerabilities highlighted in this study is likely to consolidate the therapeutic work. While the menopause representations were neutral or positive overall, this sample reported a small degree of anxious and depressive emotions in relation to their menopause, and representations were more negative for women approaching or entering the menopause. When assessing middle-age women with anxious or depressed mood, clinicians should be mindful to investigate what meaning those women attribute to the menopause and their affective symptoms, especially in the early stages of the climacteric.

For this, clinicians could use questions such as “What does it mean for you to be menopausal?”, “What impact do you think the menopause has [or will have] on you or your life?”, “Are you concerned about how your body may change during the menopause?”, “Does going through the menopause make you feel angry, or sad, or anxious?”, “How do you think you will cope [are coping]?” Providing accurate psychoeducation on the climacteric, as well as emphasising the client’s past ability to cope with body changes or other stressors, or highlight improved self-efficacy as women transit through the menopause, would be useful at that point.

In the current study, catastrophic thinking was found to be strongly correlated with expressing negative emotions and thoughts in regard to the menopause. Its direct impact at all levels of the final model (menopause representations, flush appraisals and avoidance coping) also suggests that clinicians should pay particular attention to this factor during assessment and treatment of flushes. Exploring, challenging and restructuring catastrophic cognitions, either in a general context, or specifically about flushes, would likely be helpful for those women tending to catastrophise. The steps in therapy would include challenging the primary appraisal of the perceived threat posed by the menopause and flushing, as well as the secondary appraisal of being unable to cope.
This could include leading clients to challenge their own thoughts with questions such as “What evidence do I have that the menopause is a dreadful thing to go through?”, “Have I ever fainted when experiencing a hot flush? Is this likely to happen?”, “How do I know that everyone always notice I’m having a hot flush?”, “How does it help me to avoid situations where I could have a flush?”, and “How have I been able to cope in the past in worse situations?”

While control beliefs did not influence other variables at all stages of the model, as catastrophic thinking did, they were the strongest predictor of the menopause representations and VMS bothersomeness. As mentioned earlier, control beliefs relate more to the perceived ability to cope with flushes than the actual outcome from the coping behaviour. As with catastrophic thinking, exploring general and VMS-specific control beliefs would be a useful start in therapy. Again, treatment strategies through thought monitoring and cognitive restructuring may help bolster stronger control beliefs in clients’ ability to cope with flushes. This could include presenting evidence on how the client is able to cope in other aspects of her life, or emphasize instances in which she is able to handle situations well when she experiences flushes. Exploring positive coping strategies at this stage, such as carrying on, shifting focus to task, or using humour, with emphasis on how this is likely to reduce distress during flushing, would also be helpful.

The findings that negative menopause representations, as well as cognitive/emotional factors, were associated with avoidance coping, and that avoidance correlated with worse flushing appraisals also have clinical significance. Avoidance is likely to maintain the distress associated with VMS, and as many clinicians are aware, avoidance serves to maintain anxiety, and, precludes opportunities to explore positive alternatives and experiences of coping with a threat. During therapy, providing psychoeducation on avoidance would therefore be useful, as would attempts to explore avoidant behaviours (for instance avoiding social situations, hiding transpiration with more layers of clothing) and their relationship with increasing and maintain anxious thoughts. This could be followed by identifying habitual patterns of avoidance and teaching alternative coping skills. This study having shown that similar patterns of relationships between cooling strategies and VMS bothersomeness to that of avoidance, it would also be worthwhile for clinicians to explore if cooling is used in a similar way to avoidance coping.
Finally, in this study, perceived stress had a direct influence on how flushes interfered with women’s daily life. Paced respiration has not been shown to have direct beneficial effects on flushes, and research has yielded mixed evidence for the use of relaxation (North American Menopause Society, 2015), but stress management could still be provided to women who present with high levels of stress, as it is likely that the indirect effects of therapy would benefit those women in managing their flushes across various life domains. In this study, interference due to flushing was strongest for sleep, mood and sexual activity. Direct interventions to address insomnia, commonly experienced in middle and old age (Irwin, Cole, & Nicassio, 2006), irritable or depressed mood, as well as exploring decrease in libido and/or other sexual difficulties are also likely to be beneficial.

**Directions for future research**

The findings from the current thesis, as well as issues discussed in the previous chapters, generate several possibilities for future research. First of all, this study tested the menopause representations across menopausal status, and found that postmenopausal women’s beliefs were generally more positive compared with those of pre- and perimenopausal women. The interpretation of the results, however, was limited due to the cross-sectional design. Given the pivotal role of menopause representations in influencing the VMS experience, it would be valuable to include the Menopause Representation Questionnaire (or a similar instrument), in future longitudinal studies that include pre-, peri- and postmenopausal women. This would allow testing the *affective forecasting theory*, which would suggest that, in the case of the menopause, women adjust their cognitions as they incorporate new information.

Much research has been undertaken to determine if the menopause increases the risk of developing depression, and results so far have been mixed. There has been much less emphasis on how depression symptoms may influence the experience of the menopause. Yet, this is an important issue, given that, as this study highlighted, depressive symptoms impact upon menopausal representations. Soares (2008) discussed the findings so far regarding the relationship between the menopause and depression, and the complexity in disentangling the evidence. The new evidence from studies he reviewed led him to consider the menopause as a
“continuum of risk”, rather than just a “window of vulnerability” as it has sometimes been described. Perhaps, from a psychosocial perspective, and given contradictory findings between this study and Hunter and Chilcot’s study, future research would benefit from considering depression as a predictor rather than an outcome, and explore pre-existing menopausal schemata in middle-age premenopausal women (2013). Early intervention for depression is likely to be more fruitful than later intervention, and understanding what the approaching menopause means to women vulnerable to depression may equip them to better cope with it.

As mentioned earlier, the results of this study may have been different with the use of physiologically measured flushes. Diaries that record problem-rating or bothersomeness at the time of flushing would have also provided more accurate information. A further extension of this study would be achieved through researchers using more objective measures, such as the ones just mentioned. Nonetheless, the author understands that using ‘invasive’ methods can be difficult and costly with large samples, which are necessary for statistical power to be retained when many variables are considered. Perhaps the judicious selection of fewer variables (for instance catastrophic thinking and control beliefs) may allow for sound statistical analyses to still be performed.

A hypothesised VMS model on the cascade of cognitions for people vulnerable to catastrophising (see Figure 5) was proposed in Chapter 4. As a reminder, this model suggests that VMS triggers catastrophic cognitions, which then may lead to the negative appraisals of self (e.g., heightened negative self-consciousness, fear of social criticisms, and so forth). In turn, the resulting physiological anxious reactions may contribute to increasing the body temperature and trigger more flushing. In parallel, a fear of flushing may occur, leading to hypervigilance to body sensations relating to flushing and/or avoidance. This hypothesised model might explain why women who tend to catastrophise about flushing also experience more distressing symptoms. This model is yet to be tested.

In this study, the hypothesis that anxiety sensitivity would have a direct impact on perceived VMS frequency was not supported. No direct effects were detected on bothersomeness either, and in fact, anxiety sensitivity was redundant in all the tested models. The anxiety sensitivity scale was not VMS-specific, and this may explain the results. However, other options have not been explored. Studies on headaches have found that
anxiety sensitivity is likely to promote catastrophic thinking and maintain pain-related avoidance and pain severity (Drahovzal, Stewart, & Sullivan, 2006). Similarly, it is possible that catastrophic cognitions mediate the relationship between anxiety sensitivity and VMS perceived frequency, as well as bothersomeness. This assumption has not been tested, but requires investigation.

The paucity of well-validated psychosocial measures in the context of the menopause calls for more work to be done in this domain. Further validation of existing scales would certainly be beneficial, but the adaptation of existing generic scales could also be valuable (for instance, adapting the Objective Body Consciousness or a perceived stress scale to the menopause). Finally, the development of a scale for psychosocial coping with vasomotor symptoms would very useful for future research.

This research concerned women living within a Western culture. Australia is a multi-cultural country, and perhaps some of the participants who indicated they were Australians were actually born overseas, although populations in rural areas tend to be overwhelmingly born in Australia (Baxter, Hayes, & Gray, 2011). Nonetheless, the focus of this research could be extended to specifically include other cultures or ethnic groups, and assess if the integrative cognitive-behavioural model highlighted in this research is also applicable to these populations. Similarly, this research could be applied to other menopausal symptoms, for instance sleep disturbance or decline in libido.

Lastly, but importantly, much work needs to be done in regard to the factors that may influence menopausal beliefs. Together the four cognitive and emotional variables retained in the study final cognitive-behavioural model, only explained 45% of the variance of the menopause representations. This means that 55% remains unexplained. Conceptual information derived from others (i.e. family, friends, medical practitioners, and so forth) was not considered. It is, however, likely to play an important role and warrants investigation. Other factors could also be studied, such as perceived self-efficacy, capacity for resilience, a looming cognitive style, or a tendency to ruminate. Self-compassion has also recently generated some great interest in relation to the menopause (Brown et al., 2014; Brown, Bryant, Brown, Bei, & Judd, 2015), and could also be a factor of interest.
This thesis developed from an original question that caught the author’s attention: “If vasomotor symptoms are a physiological phenomenon, why are there so many differences in VMS experience between women across cultures and within cultures?” Guided by a biopsychosocial perspective, the author then wondered if individual psychological factors could explain those differences, at least partly. Previous research has made it clear that cognitive and emotional factors are salient contributors to the VMS experience, and menopausal beliefs or representations a key construct. The literature review highlighted the psychiatric, medical, social and media perspectives of the menopause across time in Western culture, most of them unflattering to the menopausal woman. Despite prevalent negative stereotypes, women going through the climacteric have retained neutral or positive menopausal representations of the menopause, a finding supported in this thesis. This suggests that women have somewhat resisted accepting the negative narrative that has surrounded the menopause for the last century and beyond. Nonetheless, given that pre- and perimenopausal women hold more negative representations than postmenopausal women, it is possible that cultural stereotypes still have a negative impact on the formation of menopausal representations, which are fortunately re-adjusted as women progress through the menopause.

Given that the menopause is universal but a once-in-a-lifetime experience, another question begged to be asked: What may influence those schematic representations? The literature review underlined that a number of factors could influence how women form beliefs about their menopause, and how those factors could directly influence their vasomotor symptoms experience. The Self-Regulation Model of Illness, previously identified as an appropriate model to understand the menopause experience (Chou & Schneider, 2012; Hunter & Mann, 2010) was selected as a theoretical framework for this study. Surprisingly, however, very limited research has been undertaken to clarify how stable or transient individual factors may influence the construction of illness representations. This study aimed at filling this gap by testing an integrative cognitive-behavioural model that would identify which cognitive and emotional factors pertinent to the VMS experience would influence menopausal representations, and how those would influence symptom appraisal. The mediating role of
coping, a central tenet of the SRM was also investigated. This resulted in the most comprehensive model of menopausal vasomotor symptoms that has been tested in the Australian context and internationally.

Several pertinent findings emerged in this model, which could enhance our understanding of flushing from a clinical point of view. First, the model demonstrated great support for the central role of menopausal representations in determining VMS appraisal. Schematic representations, however, are not constructed in a vacuum, and the model provided evidence that specific psychological factors influence their constructions. From a clinical practical perspective, catastrophic thinking and control beliefs were particularly relevant constructs and are recommended as focus points during Cognitive Behavioural Therapy. Depressive symptoms did influence menopausal representations, but had no impact on any other factor. The role of depression as a predictor, rather than an outcome of the menopause experience, needs further investigation. Perceived stress, another factor retained in the final model, also impacted upon the menopause representations and, unsurprisingly, interference with daily life due to flushing. Correlation findings in this study about avoidance coping also highlighted the need to explore avoidant behaviour and its possible role in maintaining flush anxiety and negative VMS experience. From a theoretical viewpoint, the finding that the role of coping as a mediator between the menopause representations and flush appraisal was weak, suggests that menopausal women are more likely to adapt coping strategies to the appraisal of flushing, rather than flush appraisal being a result of coping. The SRM is strongly built upon the assumed mediation role of coping, but it is also based on an understanding that relationships between constructs during self-regulation processes are fluid and likely to be of bi-directional nature. Thus, this finding, while not supporting the SRM theoretical framework per se, does not contradict it either.

Psychological research on the menopause is still in its infancy. It is, however, likely to gain more momentum as women seek alternatives to medical treatment, which remains, the most efficacious avenue to treat severe vasomotor symptoms. As our understanding of psychological factors influencing the menopause experience increases, so will our ability to tailor psychological interventions. It is hoped that this thesis has contributed to increasing this understanding.


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*Psychology & Health, 27*(1), 13-29.


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Premature menopause or early menopause: Long-term health consequences. 
*Maturitas, 65*(2), 161-166.


Appendix A
Operationalisation of the STRAW Criteria

<table>
<thead>
<tr>
<th>Survey statements (page 12 of the questionnaire)</th>
<th>Menopausal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>I currently have <strong>regular</strong> menstrual cycles (periods)</td>
<td>Premenopause</td>
</tr>
<tr>
<td>I have noticed <strong>subtle changes</strong> in the way I am experiencing my menstrual cycle (in length and/or flow)</td>
<td>Premenopause (late stage)</td>
</tr>
<tr>
<td>There is a <strong>persistent change of about one week between</strong> my menstrual cycles (i.e. experiencing shorter or longer times of at least one week between periods)</td>
<td>Perimenopause (early stage)</td>
</tr>
<tr>
<td>There is <strong>persistently at least 60 days between</strong> my menstrual cycles</td>
<td>Perimenopause (late stage)</td>
</tr>
<tr>
<td>I am <strong>no longer</strong> having a menstrual cycle</td>
<td>If at least 12 months, then postmenopause</td>
</tr>
<tr>
<td><strong>How long</strong> has it been since you <strong>last</strong> had a menstrual cycle?</td>
<td></td>
</tr>
</tbody>
</table>

Note: Participants were asked to briefly describe their situation if none of the above applied to them, so they could be classified in the corresponding menopausal stage.
Appendix B

Ethics Approval from 
the Behavioural and Social Sciences Human Ethics Sub-Committee 
of the University of Melbourne

12 November 2012

Dr C.A. Bryant
Melbourne School of Psychological Sciences
The University of Melbourne

Dear Dr Bryant,

I am pleased to advise that the Behavioural and Social Sciences Human Ethics Sub-Committee approved the following Project:

Project title: Investigating Women's Health and Well-being in Mid-life
Researchers: Dr C A Bryant, Prof F K Judd, L Brown, V Brown
Ethics ID: 1136019

The Project has been approved for the period: 12-Nov-2012 to 31-Dec-2013

It is your responsibility to ensure that all people associated with the Project are made aware of what has actually been approved.

Research projects are normally approved to 31 December of the year of approval. Projects may be renewed yearly for up to a total of five years upon receipt of a satisfactory annual report. If a project is to continue beyond five years a new application will normally need to be submitted.

Please note that the following conditions apply to your approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(a) Limit of Approval: Approval is limited strictly to the research as submitted in your Project application.

(b) Variation to Project: Any subsequent variations or modifications you might wish to make to the Project must be notified formally to the Human Ethics Sub-Committee for further consideration and approval. If the Sub-Committee considers that the proposed changes are significant, you may be required to submit a new application for approval of the revised Project.

(c) Incidents or adverse affects: Researchers must report immediately to the Sub-Committee anything which might affect the ethical acceptance of the protocol including adverse effects on participants or unforeseen events that might affect continued ethical acceptability of the Project. Failure to do so may result in suspension or cancellation of approval.

(d) Monitoring: All projects are subject to monitoring at any time by the Human Research Ethics Committee.

(e) Annual Report: Please be aware that the Human Research Ethics Committee requires that researchers submit an annual report on each of their projects at the end of the year, or at the conclusion of a project if it continues for less than this time. Failure to submit an annual report will mean that ethics approval will lapse.

(f) Auditing: All projects may be subject to audit by members of the Sub-Committee.

If you have any queries on these matters, or require additional information, please contact me using the details below.

Please quote the ethics ID number and the title of the Project in any future correspondence.

On behalf of the Sub-Committee I wish you well in your research.

Yours sincerely,

Mr Tony Callahan
Secretary, Behavioural and Social Sciences HESC
Phone: 8344 2067, Email: t.callahan@unimelb.edu.au

cc: HEAG Chair - Behavioural Science

Office for Research Ethics and Integrity
The University of Melbourne, Level 1, 780 Elizabeth St Melbourne Victoria 3010 Australia
T: +61 3 8344 2000

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Appendix C

Plain Language Statement

Dr Christina Bryant (Supervisor)
Centre for Women’s Mental Health/Royal Women’s Hospital
School of Psychology, University of Melbourne
ph: 03 8345 3908

Professor Fiona Judd (Supervisor)
Centre for Women’s Mental Health/Royal Women’s Hospital
ph: 03 8345 2070

Ms Lydia Brown (PhD/ Master of Psychology, Clinical, student)
School of Psychology, University of Melbourne
ph: 03 8345 3908

Ms Valerie Brown (PhD/ Master of Psychology, Clinical, student)
School of Psychology, University of Melbourne
ph: 03 8345 3908

Project title: Investigating Women’s Health and Well-being in Midlife

Introduction

You have been contacted because you have agreed to participate in the ongoing research that is part of the Rural Health Promotion Project. The aim of the current study is to investigate the well-being of women in their mid-life as well as to explore the ways in which women think and feel about the menopause. As a woman and someone who is in the age range of 40 to 60, we would like to invite you to participate in this new project. This research will form part of Ms Lydia Brown and Ms Valerie Brown’s Doctorate of Philosophy (PhD) thesis. It has received ethics approval from the University of Melbourne Human Research Ethics Committee.

What will I be asked to do?

Should you agree to participate, you would be asked to complete the attached questionnaire at a time convenient to you. We estimate that this should take approximately 40-50 minutes. This questionnaire asks you about your feelings, your personality, your thinking style, your health, events in your life and, if applicable to you, your experience of the menopause.
How will my confidentiality be protected?

The results of this study will be reported as group data only. Your individual information will not be identifiable in the report. To preserve your anonymity, your consent form and your questionnaire booklet will be separated when we receive your documents. To further preserve your confidentiality, we will store your name and contact details in a separate, locked cabinet from the data you supply. All computer files will be password protected and accessible to the researchers only. You should note that these measures are only able to guarantee confidentiality within the limits of the law.

How will I receive feedback?

A summary of the research findings will automatically be sent to you when the research has been completed (2014-2015). It is also possible that the aggregated results will be published in peer-review journals and/or presented at academic conferences. The data will be kept securely in the Department of Psychology for five years from the date of publication, before being destroyed.

Will participation prejudice me in any way?

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so.

We do believe that taking part in this research does not include any risk to yourself, however if you have any concerns or if you feel any distress whilst completing the questionnaire, please do not hesitate to contact Dr. Christina Bryant at the School of Psychology, University of Melbourne, on 03 8345 3906.

Please note that if your questionnaire scores indicate that you may be experiencing significant depression, we will contact you by telephone. Alternatively, you may contact the principal researcher, Dr. Bryant, who can discuss your concerns and possible treatment options.

Where can I get further information?

Should you require any further information, you may contact either one of the researchers, Dr Bryant on 03 8345 3906, or Ms Lydia Brown or Ms Valerie Brown on 03 8345 3908. Should you have any concerns about the conduct of the project, you are welcome to contact the Executive Officer, Human Research Ethics, the University of Melbourne, on ph: 03 8344 2073, or fax: 03 9347 6739.

How do I agree to participate?

If you are willing to participate, please sign the enclosed consent form, complete the attached questionnaire and return both of them in the Reply Paid envelope provided.

If you decide not to answer any of the questions, you do not need to return the questionnaire. However, if you start the questionnaire but do not finish it, we would be grateful if you could return the discontinued questionnaire, with the consent form, in the envelope provided.
Appendix D

Informed Consent Form

School of Psychological Sciences

Informed Consent Form

PROJECT TITLE: Investigating Women's Health and Well-being in Midlife

Name of participant: .................................................................

Name of Investigator(s): Professor Fiona Judd, Dr. Christina Bryant, Ms Valerie Brown and Ms Lydia Brown

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written plain language statement to keep.

2. I understand that after I sign and return this consent form it will be retained by the researcher.

3. I understand that my participation will involve completing and returning a questionnaire booklet and I agree that the researcher may use the results as described in the plain language statement.

4. I acknowledge that:
   (a) the possible effects of completing the questionnaire have been explained to my satisfaction;
   (b) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided;
   (c) the project is for the purpose of research;
   (d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;
   (e) my name will be not appear in any publications, all the information I provide will be used in an aggregated form only
   (f) I have been informed that a copy of the research findings will be forwarded to me.

Participant signature: .......................................................... Date: ..........................................................

We are currently updating our records. We would be grateful if you could supply your current telephone number in the space below:

Area code: ........ Home phone or mobile: ........................................

---

Psychological Sciences
The University of Melbourne, Melbourne Victoria 3010 Australia
T: +61 3 8344 6377 F: +61 3 9347 6818
W: www.psych.unimelb.edu.au

HEEC 113691.1 July 2012 - Version 1
Appendix E
Research Questionnaire

Women’s Health and Well-being in Mid-life

ABOUT THIS QUESTIONNAIRE

This questionnaire asks you about how you feel, how you think, your health and, if applicable to you, your experience of the menopause.

There are 4 sections in the questionnaire and it will take approximately one hour to complete (you may take break in between sections if you find filling it in continuously is tiring). Please answer the questions as honestly as you can, remembering your responses are completely anonymous and strictly confidential.

If you have any questions or concerns about the material in this questionnaire, you can contact PhD Researchers Lydia Brown or Valerie Brown on (03) 8345 3908 or Principal Researcher Christina Bryant on (03) 8345 3906.

We thank you for your time and contribution to the research.

When you have finished, please return this questionnaire along with the signed informed consent form to the researchers using the reply-paid envelope provided, or sending to: Attention Dr. Christina Bryant, Royal Women’s Hospital, Reply Paid 65760, PARKVILLE VIC 3052.

SECTION 1 – This section is gathering information about you

First, we would like to gather some basic information about you. Please fill in the gaps and tick the option appropriate to you.

1. Date of birth ........../........../.......... please note that this information is essential to this research

2. Your height ...............cm OR ............ feet ........ inch(es)
   Your weight ...............kgs OR ............ pounds

3. Education
   □ Up to Year 10 (Form 4)
   □ Up to Year 12 (Form 6)
   □ Trade certificate completed
   □ TAFE certificate completed
   □ University undergraduate degree
   □ University postgraduate degree
   □ Other
   Please specify: ........................................

4. Employment status
   □ Employed full-time
   □ Employed part-time
   □ Unemployed
   □ Full-time house duties
   □ Retired
   □ Disability/sickness benefit

5. Relationship status
   □ Married
   □ Separated/divorced
   □ Widowed
   □ Single/never married
   □ Other
   Please specify: .................................
6. Living situation
☐ Living alone (or with unrelated others)
☐ Living with spouse/partner (no children)
☐ Living with your spouse/partner and child(ren)
☐ Lone parent (yourself and child(ren))
☐ Living with parent(s)
☐ Other
Please specify: ______________________

7. Children (please indicate the number of children you have in the space provided)
Natural child(ren) ……
Adopted child(ren) ……
Step-child(ren) ……
Foster child(ren) ……

8. Ethnicity/country of origin
☐ Aboriginal/Torres Strait Islander
☐ Australian
☐ British
☐ New-Zealander
☐ Italian
☐ Greek
☐ Vietnamese
☐ Cambodian
☐ Other
Please specify: ______________________

SECTION 2 – This section is about your physical health

This section relates to information about your physical health. Please circle the number that best represents how you feel and how well you are able to do your usual activities.

1. In general would you say your health is:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

   a. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf
   Yes, limited a lot  | 1 | 2 | 3
   Yes, limited a little | 4 | 5 |
   No, not limited at all | 6 | 7 | 8

   b. Climbing several flights of stairs
   Yes, limited a lot  | 1 | 2 | 3
   Yes, limited a little | 4 | 5 |
   No, not limited at all | 6 | 7 | 8

3. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

   a. Accomplished less than you would like
   Yes | No
   1   | 2

   b. Were limited in the kind of work or other activities
   Yes | No
   1   | 2

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

   Yes | No
   1   | 2

   a. Accomplished less than you would like
   1   | 2

   b. Did work or other activities less carefully than usual
   1   | 2
5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>A good bit of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
</table>

a. Have you felt calm and peaceful?
   1  2  3  4  5  6
b. Did you have a lot of energy?
   1  2  3  4  5  6
c. Have you felt downhearted and blue?
   1  2  3  4  5  6

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>A good bit of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
</table>

SECTION 3 – This section is about how you think, feel and behave

Please read carefully the statements below and describe how accurately each statement describes you by ticking the box corresponding to your choice. Please describe yourself as you generally are now, not as you may be in the future.

<table>
<thead>
<tr>
<th>This statement is ...</th>
<th>Very inaccurate</th>
<th>Moderately inaccurate</th>
<th>Neither inaccurate nor accurate</th>
<th>Moderately accurate</th>
<th>Very accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often feel blue.</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I feel comfortable around people</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I do not like art</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I have a good word for everyone</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I am always prepared</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I dislike myself</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I make friends easily</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I have a vivid imagination</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I believe that others have good intentions</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I pay attention to details</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I am often down in the dumps</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I am skilled in handling social situations</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I have a rich vocabulary</td>
<td>1  2  3  4  5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This statement is ...</td>
<td>Very inaccurate</td>
<td>Moderately inaccurate</td>
<td>Neither inaccurate nor accurate</td>
<td>Moderately accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------</td>
<td>-----------------------</td>
<td>--------------------------------</td>
<td>---------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>14. I respect others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I get chores done right away</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. I have frequent mood swings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I am the life of the party</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. I carry the conversation to a higher level</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. I accept people as they are</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I carry out my plans</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. I panic easily</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. I know how to captivate people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. I enjoy hearing new ideas</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. I make people feel at ease</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. I make plans and stick to them</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. I seldom feel blue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27. I have little to say</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28. I am not interested in abstract ideas</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29. I waste my time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30. I have a sharp tongue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31. I feel comfortable with myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>32. I keep in the background</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>33. I enjoy wild flights of fantasies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>34. I cut others to pieces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>35. I find it difficult to get down to work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>36. I rarely get irritated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>37. I would describe my experiences as somewhat dull</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>38. I avoid philosophical discussions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>39. I suspect hidden motives in others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>40. I do just enough work to get by</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>41. I am not easily bothered by things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>42. I don't like to draw attention to myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>43. I do not enjoy going to art museums</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>44. I get back at others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>45. I don't see things through</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>46. I am very pleased with myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>47. I don't talk a lot</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>48. I rarely look for a deeper meaning in things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>49. I insult people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>50. I shirk my duties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
We are interested in how you have been feeling over the **past week**. Rate how you have felt by circling the appropriate number. Don’t spend too long on your response, it is your first impression that we are interested in.

<table>
<thead>
<tr>
<th>In the past week, I have felt...</th>
<th>Very slightly or not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interested</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Distressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Excited</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Upset</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Strong</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Guilty</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Scared</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Hostile</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Enthusiastic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Proud</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Irritable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Ashamed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Inspired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Nervous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Determined</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. Attentive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Jittery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. Active</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. Afraid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, rate each item by circling the appropriate number on the line. **Please be open and honest in your responses.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Neither agree nor disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In most ways my life is close to my ideal</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. The conditions of my life are excellent</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I am satisfied with my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. So far I have gotten the important things I want in life</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. If I could live my life over, I would change almost nothing</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
The following questions ask you about your feelings and thoughts during the last month. In each case, please circle the number that you think is most appropriate.

<table>
<thead>
<tr>
<th>In the last month.....</th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Fairly often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often have you been upset because of something that happened unexpectedly?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How often have you felt that you were unable to control the important things in your life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. How often have you felt nervous and “stressed”?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. How often have you felt confident about your ability to handle your personal problems?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. How often have you felt that things were going your way?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. How often have you found that you could not cope with all the things that you had to do?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. How often have you been able to control irritations in your life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. How often have you felt that you were on top of things?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. How often have you been angered because of things that were outside of your control?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. How often have you felt difficulties were piling up so high that you could not overcome them?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The following events may or may not have happened to you during the past year. Have any of the following events or problems happened to you during the past year? Please answer by simply ticking the items that apply to you.

1. Death of a spouse
2. Divorce
3. Marital separation
4. Imprisonment
5. Death of a close family member
6. Personal injury or illness
7. Marriage
8. Dismissal from work
9. Marital reconciliation
10. Retirement
11. Change in health of family member
12. Pregnancy
13. Sexual difficulties
14. Gain a new family member
15. Business readjustment
16. Change in financial state
17. Death of a close friend
18. Change to different line of work
19. Change in frequency of arguments
20. Major mortgage
21. Foreclosure of mortgage or loan
22. Change in responsibilities at work
23. Child leaving home
24. Trouble with in-laws
25. Outstanding personal achievement
26. Spouse starts or stops work
27. Begin or end education
28. Change in living conditions
29. Revision of personal habits
30. Trouble with boss
31. Change in working hours or conditions
32. Change in residence
33. Change in education institutions
34. Change in recreation
35. Change in church activities
36. Change in social activities
37. Minor mortgage or loan
38. Change in sleeping habits
39. Change in number of family reunions
40. Change in eating habits
41. Vacation
42. Christmas
43. Minor violation of law
Please read each following statement carefully before answering. To the right of each item, please indicate **how often you behave in the stated manner**.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Almost never</th>
<th>Almost always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I’m disapproving and judgmental about my own flaws and inadequacies</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. When I’m feeling down I tend to obsess and fixate on everything</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>that’s wrong</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. When things are going badly for me, I see the difficulties as part of</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>life that everyone goes through</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. When I think about my inadequacies, it tends to make me feel</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>more separate and cut off from the rest of the world</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I try to be loving towards myself when I’m feeling emotional pain</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. When I fail at something important to me I become consumed by</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>feelings of inadequacy</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. When I’m down and out, I remind myself that there are lots of</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>other people in the world feeling like I am</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. When times are really difficult, I tend to be tough on myself</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. When something upsets me I try to keep my emotions in balance</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. When I feel inadequate in some way, I try to remind myself that</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>feelings of inadequacy are shared by most people</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. I’m intolerant and impatient towards those aspects of my personality</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I don’t like.</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. When I’m going through a very hard time, I give myself the</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>caring and tenderness I need.</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. When I’m feeling down, I tend to feel like most other people are</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>probably happier than I am.</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. When something painful happens I try to take a balanced view of the</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>situation</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. I try to see my failings as part of the human condition</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. When I see aspects of myself that I don’t like, I get down on</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>myself</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. When I fail at something important to me I try to keep things in</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>perspective</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. When I’m really struggling, I tend to feel like other people must be</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>having an easier time of it</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. I’m kind to myself when I’m experiencing suffering</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. When something upsets me I get carried away with my feelings</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. I can be a bit cold-hearted towards myself when I’m experiencing</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>suffering</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. When I’m feeling down I try to approach my feelings with</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>curiosity and openness</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. I’m tolerant of my own flaws and inadequacies</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24. When something painful happens I tend to blow the incident out of</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>proportion</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. When I fail at something that’s important to me, I tend to feel</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>alone in my failure</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. I try to be understanding and patient towards those aspects of my</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>personality I don’t like</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Circle the number for each statement that best describes how often you felt or behaved this way **during the past week.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Rarely or none of the time</th>
<th>Some or a little of the time</th>
<th>Occasionally or a moderate amount of time</th>
<th>Most or all of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I was bothered by things that usually don’t bother me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>I did not feel like eating; my appetite was poor</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>I felt that I could not shake off the blues even with help from my family or friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>I felt that I was just as good as other people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>I had trouble keeping my mind on what I was doing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>I felt depressed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>I felt that everything I did was an effort</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>I felt hopeful about the future</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>I thought my life had been a failure</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>I felt fearful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>My sleep was restless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>I was happy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>I talked less than usual</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>I felt lonely</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>People were unfriendly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>I enjoyed life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>I had crying spells</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>I felt sad</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>I felt that people disliked me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>I could not get “going”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Below are some statements about feelings and thoughts. Please circle the number that best describes your experience over the **last 2 weeks.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>None of the time</th>
<th>Rarely or none of the time</th>
<th>Some of the time</th>
<th>Often</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I’ve been feeling optimistic about the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>I’ve been feeling useful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>I’ve been feeling relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>I’ve been feeling interested in other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>I’ve had energy to spare</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>I’ve been dealing with problems well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>I’ve been thinking clearly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>I’ve been feeling good about myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>I’ve been feeling close to other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>I’ve been feeling confident</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>I’ve been able to make up my own mind about things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>I’ve been feeling loved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>I’ve been interested in new things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>I’ve been feeling cheerful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Please read the following statements and circle the one number that best represents the extent to which you agree. Answer all the items on the basis of your own experience but if any of the items concern something that is not part of your experience, answer on the basis of how you might feel if you had such an experience.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Very little</th>
<th>A little</th>
<th>Moderate</th>
<th>Much</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important for me not to appear nervous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. When I cannot keep my mind on a task, I worry that I might be going</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>crazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. It scares me when my heart beats rapidly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. When my stomach is upset, I worry that I might be seriously ill</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. It scares me when I am unable to keep my mind on a task</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. When I tremble in the presence of others, I fear what people may think</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>of me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. When my chest feels tight, I get scared that I won’t be able to</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>breathe properly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. When I feel pain in my chest, I worry that I’m going to have a heart</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>attack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I worry that other people will notice my anxiety</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. When I feel “spacey” or spaced out, I worry that I may be</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>mentally ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. It scares me when I blush in front of people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. When I notice my heart skipping a beat, I worry that there is</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>something seriously wrong with me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. When I begin to sweat in a social situation I fear people will think</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>negatively of me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. When my thoughts seem to speed up, I worry that I might be</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>going crazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. When my throat feels tight, I worry that I could choke to</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>death</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. When I have trouble thinking clearly, I worry that there is</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>something wrong with me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I think it would be horrible for me to faint in public</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. When my mind goes blank, I worry there is something terribly wrong</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>with me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How strongly do you disagree or agree with the following statements? Please circle appropriately.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have little control over the things that happen to me</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. There is really no way I can solve some of the problems I have</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. There is little I can do to change many of the important things in my</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I often feel helpless in dealing with the problems of life</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. Sometimes I feel that I’m being pushed around in life</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. What happens to me in the future mostly depends on me</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. I can do about anything I really set my mind to do</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
This section aims at understanding your beliefs and thoughts regarding the following items. Sometimes these items are believed to be DANGEROUS. Please read each item carefully and choose a number to rate the extent to which you believe them to be dangerous, even if they have not happened to you. Please complete all items but do not spend too much time, and try to answer all of the items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Not at all dangerous</th>
<th>A little dangerous</th>
<th>Quite dangerous</th>
<th>Very dangerous</th>
<th>Extremely dangerous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling edgy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Having an accident</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Mind not functioning normally</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Being miserable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Being injured</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Unable to think rationally</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Feeling shaky</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Having a stroke</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Unable to control thinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Being agitated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Being ill</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Losing memory</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Unable to relax</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Being suffocated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Being mentally blocked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Being alarmed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. Being attacked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Being out of senses</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. Being angry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. Losing sight</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. Being mentally blurred</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Circle the number below that corresponds to **how much you agree or disagree with each of the statements**. If the statement does not apply to you, imagine how you would feel or what you would think, if it did.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I rarely think about how I look</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>2. When I can't control my weight, I feel like something must be wrong with me</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>3. I think it is more important that my clothes are comfortable than whether they look good on me</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>4. I feel ashamed of myself when I haven't made the effort to look my best</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>5. I think more about how my body feels than how my body looks</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>6. I feel like I must be a bad person when I don't look as good as I could</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>7. I rarely compare how I look with how other people look</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>8. I would be ashamed for people to know what I really weigh</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
The following questions ask how much you agree with the statements. Please circle the number corresponding to the extent to which you agree or disagree.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. As people get older they are better able to cope with life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. It is a privilege to grow old</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Old age is a time of loneliness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Wisdom comes with age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. There are many pleasant things about growing older</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Old age is a depressing time of life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. It is important to exercise at any age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Growing older has been easier than I thought</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I find it more difficult to talk about my feelings as I get older</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I am more accepting of myself as I have grown older</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I don’t feel old</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I see old age mainly as a time of loss</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. My identity is not defined by my age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I have more energy now than I expected for my age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I am losing my physical independence as I get older</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Problems with my physical health do not hold me back from doing what I want to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. As I get older, I find it more difficult to make new friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. It is very important to pass on the benefits of my experiences to younger people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. I believe my life has made a difference</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I don’t feel involved in society now that I am older</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. I want to give a good example to younger people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. I feel excluded from things because of my age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. My health is better than I expected for my age</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. I keep myself as fit and active as possible by exercising</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
SECTION 4 - This section is about your experience of the menopause

A – Your status in regards to the menopause, contraception and medication

The following questions will help us determine your status in relation to your menopause. Please tick YES or NO and continue responding accordingly.

1. I currently have **regular** menstrual cycles (periods)  
   YES ☐ NO ☐  
   Please stop completing this questionnaire  
   See instructions on page 18 to submit

2. I have noticed **subtle changes** in the way I am experiencing my menstrual cycle (in length and/or flow)  
   YES ☐ NO ☐  
   Please go to Q.6 on this page, then continue

3. There is a **persistent change of about one week** between my menstrual cycles (i.e. experiencing shorter or longer times of at least one week between periods)  
   YES ☐ NO ☐  
   Please go to Q.6 on this page, then continue

4. There is **persistently at least 60 days between** my menstrual cycles  
   YES ☐ NO ☐  
   Please go to Q.6 on this page, then continue

5. I am **no longer** having a menstrual cycle  
   YES ☐ NO ☐  
   Please go to Q.8

6. How old were you when you started to notice a **persistent change of about one week** in the way you experienced your menstrual cycles (in length and/or flow)?  
   .......................... year-old

7. How long has it been since you last had a menstrual cycle?  
   .......................... months OR .......................... years

8. None of the above apply to me
   If this is the case, please briefly describe your situation  
   ..........................

Which of the following statements apply to you? Please indicate by ticking Yes or No

9. I have had surgery where both my ovaries have been removed  
   YES ☐ NO ☐  
   If yes, how old were you when this occurred?  
   .......................... year-old

10. I have had surgery where my uterus has been removed  
    YES ☐ NO ☐

11. I am currently using Hormone Replacement Therapy  
    YES ☐ NO ☐

12. I have used Hormone Replacement Therapy but I am not currently  
    YES ☐ NO ☐

13. I have never used Hormone Replacement Therapy  
    YES ☐ NO ☐

14. I am currently using an oral contraception, or a contraceptive implant  
    YES ☐ NO ☐

15. I am currently using another type of contraception  
    YES ☐ NO ☐

If yes, which one: ..........................
Please list any **prescribed** medications you are **currently** taking for any physical/mental health issues.

<table>
<thead>
<tr>
<th>Medication name</th>
<th>Reason(s) for taking this medication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please attach a sheet at the end of this questionnaire if you need more space, thank you*

If you have answered YES to questions 2, 3, 4, 5 and 9 on the previous page, you may be experiencing changes related to the menopause. Please continue with the following sections B and C, which ask you questions about your experience of the menopause as well as hot flushes and night sweats.

**B – Your experience of the menopause**

Please rate to what extent you think the following experiences are **part of your menopause** by ticking: YES (part of my menopause), UNCERTAIN (whether part of my menopause) or NO (not part of my menopause).

<table>
<thead>
<tr>
<th>YES</th>
<th>UNCERTAIN</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiredness</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Hot flushes</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Aches and pains</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Headaches</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Sleep difficulties</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dizziness</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Irregular periods</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Depression</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Feeling bloated</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Skin problems</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mood swings</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Night sweats</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Memory loss</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Heavy periods</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Anxiety</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Vaginal dryness</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Decreased sexual interest</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Increased weight</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Stiff joints</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
We are interested in your own personal view of how you see your menopause. Please indicate how much you agree or disagree with the following statements about your menopause by circling the number that corresponds to Strongly agree, Agree, Neither agree nor disagree, Disagree, or Strongly disagree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Going through the menopause has an impact on my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. It's a relief to be free from the risk of pregnancy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. My menopause will last about a year</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. The menopause has affected the way I see myself as a person</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Overall I feel I'm coping reasonably well with my menopause</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I feel less confident since the menopause</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. My menopause will last a long time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. If I have problems during the menopause, I know what I can do to help myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I feel more content during this phase of life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. The menopause has affected the way others see me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I am pleased that my periods have come to an end</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I feel more emotional than I did before the menopause</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. It is good to be moving into a new phase of life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I am confident that I can deal with any changes that my menopause might bring</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. My menopause will last a short time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. In time my menopausal symptoms will improve</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I feel I have the resources to manage my menopause well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. I get depressed when I think about my menopause</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. When I think about my menopause I get upset</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. My menopause makes me feel angry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. My menopause does not worry me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. My menopause makes me feel anxious</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. My menopause makes me feel afraid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
C – Your experience of hot flushes or night sweats

Hot flushes are sudden intense sensations of heat, often accompanied by sweating and/or rapid heartbeat. They usually start around the face or chest and sometimes radiate towards the rest of the body. Night sweats are the equivalent, but occur during night time. This section will ask about your experience with hot flushes and/or night sweats.

1. Are you currently experiencing hot flushes and/or night sweats? YES ☐ NO ☐
   Please complete Q. 3 and Q. 4 on this page and then continue

2. Have you ever experienced hot flushes and/or night sweats (linked to your menopause)? YES ☐ NO ☐
   Please complete Q. 5 and Q. 6 on this page and then continue
   Please stop completing this questionnaire. See instructions on page 18 for return.

3. How often (on average) are you currently experiencing hot flushes?
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day ............
   or if less often, per week ............
   or if even less often, per month ............

4. How often (on average) are you currently experiencing night sweats?
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day ............
   or if less often, per week ............
   or if even less often, per month ............

5. How often (on average) did you experience hot flushes in the past?
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day ............
   or if less often, per week ............
   or if even less often, per month ............

6. How often (on average) did you experience night sweats in the past?
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day ............
   or if less often, per week ............
   or if even less often, per month ............

The following questions relate to your experience of hot flushes/night sweats. Please answer by circling your preference from 1 to 10

<table>
<thead>
<tr>
<th>1. To what extent did/do you regard your hot flushes/night sweats as a problem?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. How distressed did/do you feel about your hot flushes?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. To what extent did/do your hot flushes interfere with your daily routine?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. How much control did/do you think you have over your hot flushes?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. How well were/are you coping with your hot flushes?</th>
<th>Not at all</th>
<th>Very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
We are interested in what you do OR did when you have/had hot flushes or night sweats. Please indicate how much you agree or disagree with the following statements about your hot flushes/night sweats by ticking: Strongly disagree, Moderately disagree, Mildly disagree, Mildly agree, Moderately agree, Strongly agree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Moderately disagree</th>
<th>Mildly disagree</th>
<th>Mildly agree</th>
<th>Moderately agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I have/had hot flushes, I carry(ied) on and ignore(d) them</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have/had to leave or avoid some social situations because of hot flushes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. When I have/had hot flushes or night sweats I try(ied) to accept them and let them flow over me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I use(d) humour to deal with hot flushes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I don’t/didn’t go out as much now/then because of hot flushes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. If I have/had a hot flush, I relax(ed) and focus(ed) on my breathing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I don’t/didn’t use public transport because I have/had hot flushes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I don’t/didn’t talk about menopausal symptoms because people wouldn’t understand</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I carry(ied) things with me (fans, drinks, wet wipes) in case I have/had a hot flush</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I take/took action to cool down (fan, drinks take off layers) when I have/had a flush</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I try(ied) to cover or hide my face when I am/was having a hot flush</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The following items are about how your hot flushes or night sweats are interfering now OR have interfered in the past with various aspects of your life. Please rate each statement by circling a number indicating how much they interfere or have interfered. Higher numbers indicate more interference with your life.

**During the past week….**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Do not interfere</th>
<th>Completely interfere</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Work (work outside the home and housework)</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>2. Social activities (time spent with family, friends, etc.)</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>3. Leisure activities (time spent relaxing, doing hobbies, etc.)</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>4. Sleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Concentration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Relaxation with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Sexual activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Enjoyment of life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Overall quality of life</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Values</th>
<th>0</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>
<th>10</th>
</tr>
</thead>
</table>

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When you are (or were) having a hot flush, you may (have) experienced a variety of thoughts and fears. Examples of some thoughts are given below. Against each statement, please circle the number to show how often you think OR thought in this way when having a hot flush.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Quite often</th>
<th>Frequently</th>
<th>Very frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I cannot possibly concentrate</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. It is terrible and I feel that it is never going to get any better</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. It is awful and I feel that it overwhelms me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I feel that my life isn’t worth living</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I worry all the time about whether the flushes are going to end</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I feel I can’t stand it any more</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Other people think that I’m acting peculiarly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I feel ill all of the time</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I will suffocate if the flush doesn’t pass</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I feel like a different person</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I’ll have to give up work* if this goes on (*paid or unpaid work)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I feel like I can’t go on</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I’ll faint if the flush doesn’t stop soon</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I think that I have something wrong with me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please indicate your level of agreement or disagreement with each statement on the following scale, by circling the appropriate number next to each statement:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hot flushes are controlling my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. It is largely my own responsibility to manage my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I can reduce my distress during hot flushes by remaining calm and relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Too often, a hot flush just seems to hit me out of the blue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. If I do all the right things, I can successfully manage hot flush symptoms</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. I can do a lot of things myself to cope with my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. When it comes to managing my hot flushes, I feel I can only do what my doctor tells me to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. When I manage my personal life well, my hot flushes do not flare up so much</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. I have considerable ability to control my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. I rely on other people to help me cope with my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Usually I can tell the days when my hot flushes are going to flare up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. No matter what I do or how hard I try, I just can’t seem to get any relief from hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>----------</td>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td>13. I am coping effectively with my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. It seems as though factors beyond my control affect my hot flushes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. I want to learn as much as I can about hot flushes and the menopause</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Is there anything else about your health and well-being in mid-life you would like to tell us?*

________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________________________

*(Please feel free to make any comments in the space provided above, even if you have not completed the Section 4.B on the menopause or Section 4.C on hot flushes/night sweats)*

---

**Instructions on returning this questionnaire**

*Please return the questionnaire along with the signed informed consent form in the reply paid envelope, or post to:*

**Attention Dr. Christina Bryant, Royal Women's Hospital, Reply Paid 65760, PARKVILLE VIC 3052.**

Thank you for taking the time to complete this questionnaire. Your participation in this project is valuable to us and will assist in our efforts to better understand the experiences of women during their mid-life.
Appendix F

Amendment to the Questionnaire

C – Your experience of hot flushes or night sweats

Hot flushes are sudden intense sensations of heat, often accompanied by sweating and/or rapid heartbeat. They usually start around the face or chest and sometimes radiate towards the rest of the body. Night sweats are the equivalent, but occur during night time. This section will ask about your experience with hot flushes and/or night sweats.

1. Are you currently experiencing hot flushes and/or night sweats? 
   YES □  NO □
   Please complete Q. 3 and Q. 4 on this page and then continue
   Please continue

2. Have you ever experienced hot flushes and/or nights sweats (linked to your menopause)? 
   YES □  NO □
   Please complete Q. 5 and Q. 6 on this page and then continue
   Please stop completing this questionnaire. See instructions on page 18 for return.

(Please ensure to write down a number in the following questions, even if it is approximate, thank you)

3. How often (on average) are you currently experiencing hot flushes? 
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day .......... or if less often, per week .......... or if even less often, per month ..........

4. How often (on average) are you currently experiencing night sweats? 
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day .......... or if less often, per week .......... or if even less often, per month ..........

5. How often (on average) did you experience hot flushes in the past? 
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day .......... or if less often, per week .......... or if even less often, per month ..........

6. How often (on average) did you experience night sweats in the past? 
   Please choose the most appropriate timeframe and indicate the number of times in the space provided
   per day .......... or if less often, per week .......... or if even less often, per month ..........

The following questions relate to your experience of hot flushes/night sweats. Please answer by circling your preference from 1 to 10

<table>
<thead>
<tr>
<th>1. To what extent did/do you regard your hot flushes/night sweats as a problem?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. How distressed did/do you feel about your hot flushes?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. To what extent did/do your hot flushes interfere with your daily routine?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. How much control did/do you think you have over your hot flushes?</th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. How well were/are you coping with your hot flushes?</th>
<th>Not at all</th>
<th>Very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Appendix G

Cover Letter for 2\textsuperscript{nd} Wave of Data Collection

16\textsuperscript{th} May 2013

Dear Madam,

\textit{Project: "Investigating Health and Well-being among Midlife Woman"}

We recently sent you a questionnaire pack in the mail for an ongoing research study. So far we do not seem to have received your returned questionnaire.

This is just a friendly reminder to please take the time to fill out this questionnaire and return it within the enclosed self-addressed envelope. Your responses will help us to better understand factors that contribute to health and well-being among midlife women. This knowledge, in turn, can be used to support other women to lead successful and resilient lives during the mid-life years.

\textbf{How do I agree to participate?}

If you are willing to participate, please sign the enclosed consent form, complete the questionnaire and return both of them in the Reply Paid envelope provided.

We really value your participation, and hope you will be able to complete and return the enclosed questionnaire.

Yours sincerely,

\[\signature\]

Dr. Christina Bryant

School of Psychological Sciences
Faculty of Medicine Dentistry and Health Sciences
University of Melbourne
Phone: 03 8344 6371
Appendix H
Model Fit Indices for Mediation Analyses

Model fit indices for mediation analyses presented in Table 13 for the testing of hypothesis $H_9$

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Chi Square ($\chi^2$)</th>
<th>df</th>
<th>p</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>Number of distinct parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control beliefs</td>
<td>51.096</td>
<td>3</td>
<td>&lt; .001</td>
<td>.873</td>
<td>.576</td>
<td>.307</td>
<td>.237-.384</td>
<td>17</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>78.260</td>
<td>3</td>
<td>&lt; .001</td>
<td>.770</td>
<td>.234</td>
<td>.384</td>
<td>.313-.460</td>
<td>17</td>
</tr>
<tr>
<td>Negative affect</td>
<td>74.456</td>
<td>3</td>
<td>&lt; .001</td>
<td>.754</td>
<td>.179</td>
<td>.374</td>
<td>.303-.450</td>
<td>17</td>
</tr>
<tr>
<td>Catastrophic thinking</td>
<td>63.841</td>
<td>3</td>
<td>&lt; .001</td>
<td>.834</td>
<td>.445</td>
<td>.345</td>
<td>.272-.422</td>
<td>17</td>
</tr>
<tr>
<td>Anxiety sensitivity</td>
<td>73.173</td>
<td>3</td>
<td>&lt; .001</td>
<td>.770</td>
<td>.233</td>
<td>.371</td>
<td>.300-.447</td>
<td>17</td>
</tr>
<tr>
<td>Body consciousness</td>
<td>72.594</td>
<td>3</td>
<td>&lt; .001</td>
<td>.760</td>
<td>.202</td>
<td>.369</td>
<td>.299-.445</td>
<td>17</td>
</tr>
<tr>
<td>Perceived stress</td>
<td>77.332</td>
<td>3</td>
<td>&lt; .001</td>
<td>.772</td>
<td>.240</td>
<td>.382</td>
<td>.311-.458</td>
<td>17</td>
</tr>
</tbody>
</table>

Model fit indices for mediation analyses presented in Table 16 for the testing of hypothesis $H_{12}$

<table>
<thead>
<tr>
<th>Models</th>
<th>Chi Square ($\chi^2$)</th>
<th>df</th>
<th>p</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>Number of distinct parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR-Bothersomeness-Coping</td>
<td>4.210</td>
<td>3</td>
<td>.240</td>
<td>.994</td>
<td>.978</td>
<td>.049</td>
<td>.000-.146</td>
<td>17</td>
</tr>
<tr>
<td>MR-Frequency-Coping</td>
<td>10.559</td>
<td>3</td>
<td>.140</td>
<td>.926</td>
<td>.752</td>
<td>.122</td>
<td>.048-.205</td>
<td>17</td>
</tr>
<tr>
<td>MR-Interference-Coping</td>
<td>3.490</td>
<td>3</td>
<td>.322</td>
<td>.998</td>
<td>.992</td>
<td>.031</td>
<td>.000-.137</td>
<td>17</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MR-Positive strategies-VMS</td>
<td>74.564</td>
<td>3</td>
<td>&lt; .001</td>
<td>.764</td>
<td>.212</td>
<td>.375</td>
<td>.304-.450</td>
<td>17</td>
</tr>
<tr>
<td>MR-Cooling-VMS</td>
<td>65.879</td>
<td>3</td>
<td>&lt; .001</td>
<td>.781</td>
<td>.270</td>
<td>.351</td>
<td>.280-.427</td>
<td>17</td>
</tr>
</tbody>
</table>
Author/s:
Brown, Valerie Michelle

Title:
An integrative cognitive-behavioural model of menopausal hot flushes and night sweats

Date:
2017

Persistent Link:
http://hdl.handle.net/11343/129511

File Description:
Complete thesis - An Integrative Cognitive-behavioural Model of Menopausal Hot flushes and Night Sweats

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