

Reynolds, F (2002) Long-term experience of vasomotor instability: a five-year follow-up study of perceived control, coping and distress. *Counselling Psychology Quarterly*, 15 (1), 73-83.

*Objectives:* Vasomotor instability can be a long-term feature of the post-menopause yet little is known about how women cope. This study followed up a group of women over five years, to examine whether current levels of flush-related distress/discomfort were associated with past and present control beliefs, catastrophic thoughts and coping strategies. A further aim was to validate two measures developed in previous research against conceptually relevant standardised scales.

*Design/Method:* A questionnaire study of 20 women (mean age 53 years, mean flush chronicity 5.5 years) was carried out, with follow-up five years later. Measures of flush distress, flush frequency, perceived control over hot flushes, and catastrophic thoughts about flushing were compared at Time 1 and Time 2. Additionally, Multidimensional Health Locus of Control (MHLC) scores and depression (CES-D) were taken at Time 2.

*Results:* On average, all of the measures that were taken at both Time points showed improved well-being. Flush distress declined over the five year period, and became fairly mild (3.7 on the 10-point scale). Nevertheless, there were many consistencies in women's scores on most variables. Flush distress at Time 2 was completely unrelated to MHLC (internal, chance or powerful others scales). Women higher in internal health locus of control reported significantly more frequent use of diverse coping strategies to ameliorate hot flushes, especially relaxation and giving up coffee/alcohol. High external (chance) LoC was significantly associated with adopting fewer strategies. Contrary to expectation, women who reported more frequent use of multiple flush coping strategies indicated *higher* levels of distress during hot flushes at Time 2.

*Conclusion:* Tentatively, the findings suggest that an internal locus of control over health may be associated with a continuing search for multiple coping responses or 'solutions' to a long-term health problem. Coping strategies for a long-term stressor may be driven by distress rather than ameliorating it. The long-term implementation of coping strategies that restrict lifestyle (e.g. choice of drinks or clothing) could even exacerbate the stressfulness of chronic flushing for mid-life women. Psychological responses to hot flushes seem to improve over a five year period. Further exploration is needed.

## **Long-term experience of vasomotor instability: a five-year follow-up study of perceived control, coping and distress**

### **Introduction**

Whilst hot flushes appear to be most prevalent around the time of menopause, evidence suggests that flushing may continue to occur, at least sporadically, for at least fifteen years among women who reject hormonal treatment (Kronenberg 1990). For women affected in this way, the mid-life years may bring considerable physical, social and emotional discomfort. There has been very little research into women's longer-term experiences of hot flushes. Matthews (1992) argued that women are likely to experience less distress following the peri-menopause, once coping strategies for flush discomfort are discovered. However, Reynolds (1997) found little support for this argument from cross-sectional data, as participants who reported more years of vasomotor instability rated their perceived control over the physical and emotional aspects of flushing only slightly more positively compared with women with less experience of this problem. Nevertheless, Matthews' argument warrants further examination with a longitudinal study that tracks changes in individuals' levels of discomfort, flush frequency, control beliefs, and coping over time. This study follows up a group of women over five years, in order to explore whether change occurs in their reported experiences and attitudes concerning hot flushes.

Having a wide repertoire of coping strategies may ameliorate many forms of stressful experience, and has been portrayed as a positive approach to managing chronic health problems (Blalock 1993). Commonly reported strategies for managing or reducing the likelihood of hot flushes include wearing cotton clothing, reducing room temperature, and avoiding enclosed spaces, spiced foods, coffee, alcohol and stress (Hunter & Liao 1995; Reynolds 1999; Voda 1981). Strategies may alternatively address the emotional aspects of flushing (such as embarrassment), including relaxation, challenging ageist attitudes and deliberately ignoring the flush sensations. The former set of strategies clearly limit everyday choices and activities (such as visiting crowded shops or wearing silky clothing) and may paradoxically result in the woman experiencing her life to be dominated by the menopause in general and hot flushes in particular. The latter strategies are relatively invisible and impinge little on

lifestyle. The 'costs' of some coping strategies have been examined by Reynolds (1999) and this follow-up study examines in further detail the relationships between flush discomfort/distress and reported coping strategies among women who report many years of vasomotor instability.

In the field of health psychology, there has been much interest in the extent to which specific coping strategies for health problems are linked to more general attitudinal and affective variables, such as health locus of control and depression ( e.g Petrie & Weinman 1997; Steptoe & Appels 1989). As well as enabling comparison of flush reports taken across a five-year time interval, this follow-up study also afforded the opportunity to administer two standardised scales, namely the Multidimensional Health Locus of Control Scale (MHLC) and the CES-D (Center for Epidemiological Studies Depression Scale). This enabled the construct validity of two previously developed flush-specific scales to be checked, namely the Perceived Control and the Catastrophic Thoughts Scale.

The MHLC was developed by Wallston, Wallston and Devellis (1978) and comprises three dimensions. The Internal Locus of Control sub-scale measures people's perceived responsibility for their own health. The External (Chance) Locus of Control sub-scale assesses the extent to which people attribute their health to chance factors, or 'fate'. The External (Powerful Others) Locus of Control sub-scale reflects beliefs that health is dependent upon the actions of 'powerful others', including health professionals. Health locus of control has been little investigated in relation to the menopause (one exception being Liao, Hunter & Weinman (1995) whose study included some peri-menopausal women). Yet in other areas of health, having high internal health locus of control has been shown to be moderately predictive of health behaviour, active coping and less depression about pain or ill-health (Norman, Bennett, Smith, & Murphy 1998; Pimm 1997). A previous study has reported the development of a Perceived Control Index (PCI) to assess women's perceptions of control over the physical and emotional facets of hot flushes ( Reynolds 1997). The perceived control measures were found to be inversely associated with flush-related distress. This study further examines the construct validity of the PCI by examining whether women high in perceived control over hot flushes (PCI) also tend to display an internal health locus of control (internal HLOC).

Catastrophic thinking has also been shown in numerous studies to be associated with susceptibility to pain/discomfort sensations (eg Crombez et al 1998; Keefe et al 1989). Previous work (Reynolds in press) has presented evidence that catastrophic beliefs about hot flushes (for example, that they are terrible and never going to end) are highly associated with flush-related distress. This study examined whether catastrophic thinking about hot flushes is a relatively stable cognitive style over the five year period, and whether women reporting such thoughts are generally more depressed (assessed by the CES-D). The latter measure has been adopted in a number of studies examining depression in community samples of women (such as Woods and Mitchell 1997). The study allows further exploration of relationships between flush variables and depression.

To summarise, this study is unusual in following a group of mid-life women over five years, all of whom reported menopausal hot flushes initially (Time 1), and also five years later (Time 2). The aims of the study were firstly, to compare measures taken at Time 1 and Time 2 in order to discover whether psychological well-being improved over this five-year period, by examining changes in reported flush frequency, flush-related distress, control beliefs, and catastrophic thinking, and also to establish to what extent individuals were consistent in these self-reports. Secondly, relationships between the cognitive variables and reported coping strategies for hot flushes were assessed at Time 2, using a quantitative measure of coping. Thirdly, the construct validity of the previously developed flush-specific Perceived Control Index and the Catastrophic Thoughts Scale was explored by examining whether participants' Time 2 scores were related to Multi-dimensional Health Locus of Control and depression, respectively.

**Method:****Respondents:**

Fifty eight women (mean age 52 years) who reported hot flushes were initially recruited (Time 1) from community sources and through local and national newspaper requests for volunteers. Invitations to participate were not sent via general practitioners, as women seeking medical help may be a particularly distressed group (Morse et al 1994).

Respondents provided a wide range of quantitative and qualitative data via postal questionnaires. Further details of the procedure have been given in Reynolds (1997). Participants who indicated on the initial questionnaires that they were willing to be followed up were sent further questionnaires five years later. Thirty one women replied at Time 2 (53% of the original sample; 62% of those agreeing to be followed up). Twenty respondents at Time 2 reported the experience of hot flushes during the last month. This study focuses on this group of 20 women who provided a complete set of data at Time 1 and 2. The mean age was 53.0 years (range 42-63) at Time 1 and 57.9 years at Time 2. By Time 2, average flush chronicity was 10.5 years (SD 4.7).

Most of the respondents were of higher social class (reporting careers for example, in management, teaching and administration), and were married. Although numbers were relatively small, there were no appreciable differences in age, or occupational status between the Time 2 groups who reported the presence or absence of hot flushes. Almost all respondents indicated that their general physical health was good.

**Ethics:** All women were volunteers and had agreed to be contacted for the follow-up study. All were assured of anonymity, and their rights to withdraw from the study.

### **Questionnaire:**

This report focuses on the following quantitative measures, taken at both Time 1 & 2:

*Typical distress during hot flushes* (measured to the nearest cm on a 10 cm scale with anchors marked as "No distress" and "Extremely high distress")

*Flush daily frequency* ( based on a 12 hour day at Time 1 and on the average from three-day diary records at Time2)

*Flush chronicity:* (no. years since hot flushes were first noticed)

*Perceived Control Index* (see Reynolds 1997 for detailed description)

*Catastrophic Thoughts Questionnaire* (see Reynolds, in press, for detailed description)

Further measures taken at Time 2:

*Flush Coping Strategies Inventory* : This consisted of a 10-item list, each rated on a 5-point scale, ranging from 1 – ‘Never/almost never do this to reduce hot flushes’, to 5 – ‘Very often do this to reduce hot flushes’. The items were partly based on

qualitative accounts of active coping collected in earlier phases of the study, and also published research into effective ways of reducing hot flushes (Ivarsson et al 1998; Hunter & Liao 1996; Kronenberg & Barnard 1991; Nedstrand et al 1998; Wijma et al 1997)

The coping inventory was headed by the following question:

Do you carry out any of the following with the aim of reducing your hot flushes or making them more tolerable?

1.	Take herbal supplements/ vitamins	1	2	3	4	5
2.	Take brisk exercise	1	2	3	4	5
3.	Avoid coffee	1	2	3	4	5
4.	Select natural fibre clothing	1	2	3	4	5
5.	Keep room temperature cool	1	2	3	4	5
6.	Control life stress	1	2	3	4	5
7.	Yoga/ relaxation	1	2	3	4	5
8.	Creative activity	1	2	3	4	5
9.	Avoid enclosed spaces (e.g. small shops)	1	2	3	4	5
10.	Use complementary therapies(e.g.acupuncture /reflexology)	1	2	3	4	5

*Multidimensional Health Locus of Control* (MHLC, developed by Wallston et al 1978)

*Center for Epidemiological Studies Depression Scale* (CES-D, developed by Radloff 1977).

## **Results:**

- 1. Comparisons between reported flush frequency, flush-related distress, perceived control beliefs and catastrophic thoughts at Time 1 and Time 2**

*Insert Table 1 here-----*

From Time 1 to Time 2, flush frequency decreased dramatically and average flush distress declined from moderate to mild, compared with the maximum distress rating of 10. Perceived control increased significantly. The maximum possible PCI score was 48, so the figures revealed very high levels of perceived control after five years. The maximum possible CTQ score is 70 (minimum = 0), so Time 2 scores were generally very low, with many women never or rarely thinking about flushes in deeply negative ways.

Whilst the figures reveal a substantial improvement in the four measured aspects of well-being over the five year period, there were substantial individual consistencies, with significant correlations in the pairs of measures taken at Times 1 and 2. For example, women scoring relatively high within the sample at Time 1 on catastrophic thinking continued to show elevated scores five years later.

### **1. Relationships between flush frequency, distress, cognitive variables and coping strategies at Time 2.**

The Time 2 study offered an opportunity to examine relationships between distress, control beliefs and a numerical measure of coping strategies for chronic vasomotor instability among women who had experienced hot flushes for a substantial period of time. The 10-item coping strategies inventory showed quite sound internal consistency (Cronbach's alpha = 0.76). It was noted that removal of the two strategies that relied essentially on external help or expertise (use of vitamins/supplements and complementary therapies) resulted in an improved Cronbach's alpha of 0.81. However, statistical patterns within the data were little affected, and reported correlations are based on the full 10-item measure. Generally, the respondents did not make great use of the listed strategies (mean score 19.3, SD 8.0, compared with a scale minimum of 10 and a maximum of 50).

*Insert Table 2-----*

Whilst participants at Time 2 generally viewed hot flushes as only mildly distressing, their self-ratings were highly related to both perceived flush frequency, and also catastrophic thoughts during flush episodes. Beliefs in perceived control were generally quite high in this sample and no longer related to flush distress. However, the two cognitive measures, namely perceived control and catastrophic thinking about flushes, continued to show strong (inverse) connections. Coping strategies did not appear to moderate flush-related distress. Instead, respondents who reported greater use of coping strategies were significantly more likely to rate their flushes as highly discomforting, and showed a small (nonsignificant) elevation of catastrophic thoughts. Examining the individual strategies, women higher in distress reported significantly more frequent attempts to control room temperature, avoid enclosed spaces and engage in creative activity.

## **2. Relationships between depression, health locus of control and flush-related measures at Time 2.**

The CES-D presents 20 statements describing depressed feelings and perceptions. Respondents assess their frequency over the past week on a 4-point scale, with ratings spanning from 0 (Rarely/Not at all) to 3 (Most/All of the time). The maximum score is 60. Respondents in this study generally scored low, with a mean of 11.00 (SD 7.50) indicating generally positive affective states.

*Insert Table 3-----*

Respondents tended to score more highly on the internal health locus of control subscale. There was a significant inverse association between internal and external (chance) scores (correlation  $-0.43$ ,  $p < 0.05$ ). There were no significant relationships between scores on the 'powerful others' subscale and the other two subscales.

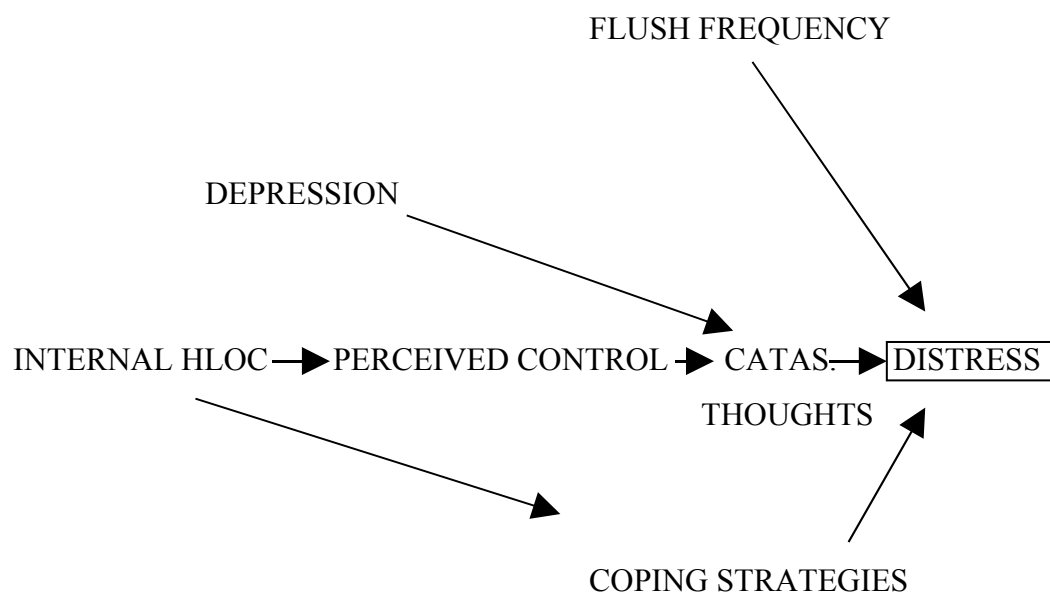
*Insert Table 4-----*



Flush frequency was not significantly related to HLOC or depression, although there was a slight trend for more frequent flushing to be linked to poorer internal locus of control. Health locus of control and depression were independent of each other, and did not statistically account for distress during flushes. However, there was a minor (non-significant) tendency for women who attributed control over health to powerful others to be more distressed about their hot flushes. High internal health locus of control (and/or low chance health locus of control) was significantly associated with perceived control over hot flushes. These relationships support the construct validity of the perceived control index. Women with an internal health locus of control also tended to report more coping strategies for hot flushes. Those scoring high on external (chance) LOC showed the reverse pattern. The general measure of depression was not predictive of the flush-related variables, with one important exception. Women expressing more catastrophic thoughts about flushing were significantly more depressed. This result also confirms the construct validity of the CTQ, as catastrophising is a common cognitive dysfunction in depressive states, according to Beck et al (1979).

The statistical patterns may be represented diagrammatically in the following way:

*Figure 1: Significant associations between flush distress and other measured variables*



In this model, flush distress is viewed as an outcome variable. It remains possible that somatic sensations (discomfort) determine cognitive and affective responses, effectively reversing the causal directions of at least some relationships.

## **Discussion**

This study revealed that at least one third of the women who participated in an initial study of hot flushes were continuing to report at least occasional hot flushes five years later. This finding supports Kronenberg's (1990) observation that flushes represent a long-term source of discomfort for some women in mid-life. Nevertheless, the results presented a reassuring decline in flush frequency and associated decreases in distress/discomfort. Participants' well-being appeared to improve over the five-year period, with substantial decreases in negative thinking and enhanced perceived control over flushing. They showed very little depression. These findings to some extent support previous arguments and evidence for long-term adjustment to the health changes associated with the climacteric (Dennerstein et al 1997; Matthews 1992).

The study has broken new ground in demonstrating substantial continuities in women's beliefs and attitudes in regard to flushing. Women high in perceived control and /or low in catastrophic thinking relative to the sample in the initial study, remained similarly positioned five years later. As reviewed earlier, many studies have established that cognitive representations of pain and illness symptoms are relevant to coping with chronic illness. This study confirms the value of this perspective for understanding long-term individual differences among women in their perception of the milder somatic discomforts of the post-menopause.

In the early phases of the research, perceived control was shown to be highly related to flush distress (Reynolds 1997). This follow-up investigation found that participants acquired high levels of perceived control over the physical and emotional facets of vasomotor instability during a five year period. Perhaps because of the resulting relative uniformity of scores, the perceived control measure no longer predicted flush distress or the use of diverse coping strategies at follow-up. On the

other hand, catastrophic thoughts about hot flushes remained highly associated with flush distress, confirming the sensitivity of this measure, as documented in earlier phases of the research (Reynolds in press). The CTQ appears to capture some of the specific ideas that infiltrate the more distressed women's subjective experience of flushing.

Both the Perceived Control Index and Catastrophic Thoughts Questionnaire received some validation from their significant and conceptually appropriate associations with health locus of control and depression respectively. Additionally, women expressing a greater sense of responsibility for their own health (Internal HLOC) reported greater use of a diverse range of coping strategies for hot flushes. This pattern has been noted in people coping with back pain (Haerkaepaeae, Jaervikoski & Vakkari 1996).

The correlation between depression and CTQ scores supports the construct validity of the latter measure. Nevertheless, the CTQ was very much more predictive of flush distress than the measure of depression. This probably reflects the flush-specific nature of the CTQ statements. Some additional interpretation can be put forward to account for the limited relationship between general depression and reported distress during flushes. Woods & Mitchell 1997 found that depression in mid-life was more associated with negative life events than the presence of vasomotor instability. Some depressed women may experience more helplessness and distress about flushing, yet others may construe flush discomforts as the least of their current stressors. Relationships between depressed mood and construing of vasomotor discomfort warrant further enquiry.

One possibly surprising result concerned the positive association between distress and *more frequent* reported use of coping strategies, particularly creative activity, avoiding enclosed spaces, and controlling room temperature. Several interpretations may be offered for this result. Perhaps intense flush sensations (including perspiration and breathlessness) drive some women to seek out a greater array of coping solutions. Paradoxically though, by restricting their intake of coffee, alcohol, spiced food, and entry into certain environments such as lifts and shops, women may elevate their distress about menopausal health issues, instead of gaining enhanced control

(Reynolds 1999). Many strategies on the checklist implied a restriction of daily activities (such as choice of clothing or coffee). Previous research into coping with chronic health problems has established that this restrictive or avoidant coping style is associated with greater distress (Brown et al 1989; Keefe et al 1989; Manne & Zautra 1992). Despite the lack of clear benefit in terms of reducing distress, high strategy use was more common among women with a strong internal health locus of control. This pattern has also been noted before in other areas of health research. Whilst an internal HLOC is more often represented in the literature as positive, its downside has received discussion also (Wallston 1989). Arntz & Schmidt (1989) have commented in relation to chronic pain patients how it is possible to seek the 'wrong type of control', resulting in the frustrating experience of repeated failure when unrealistic strategies cannot eliminate the health problem completely. This study has discovered that having an internal health locus of control appears to make the search for 'solutions' to vasomotor instability more likely, but has no clearly beneficial effects on the subjective experience of flushing. The search for 'solutions' may also be prompted by the frequency of flush episodes.

Some studies have noted quite large minorities of women who report 'doing nothing' in relation to flushing (Hunter & Liao 1995; Voda 1981). Possibly this philosophical, more accepting strategy is less stressful in the longer term. However, further enquiry is clearly required into the complex relationships between control, coping and distress.

Future research requires a larger sample size, as the major limitation of this study is its small number of participants. Loss of participants is a well known challenge of longitudinal research. The sample was also rather restricted in social composition. There were no independent measures of flush frequency or 'severity', although from the phenomenological perspective it is more important to explore women's own subjective views of the experience. Whilst showing reasonable internal reliability, the coping strategies inventory may have omitted the more cognitive/ re-framing strategies which could be most effective against stress, and it was possibly over-weighted with strategies involving 'experts' such as complementary therapies and

yoga. The coping checklist had higher internal reliability once the use of supplements and complementary therapies was omitted.

Conclusions: The outcomes of the study need to be treated with caution but they do suggest the need for further research. The study has supported the construct validity of previously developed perceived control and catastrophising measures through their relationships with assessed health locus of control and depression. The findings indicate that long-term experience of hot flushes is possibly more common than realised (with about one third of the sample continuing to report hot flushes at least occasionally at the five year follow-up). The stronger relationships between flush frequency and distress than noted in previous phases of the research possibly suggest that women's coping resources may be worn down by the challenge presented by an 'unreliable' body. Continued disruption of sleep patterns by flushing could also be detrimental to well-being (but this was not investigated). There appear to be both individual consistencies and improvements in women's control beliefs, thoughts about flushing and distress during flushes. Whilst distress may be linked to flush frequency, the cognitive/attitudinal aspects also seem important, and offer more potential for cognitive behavioural interventions. Generally, the results suggest that the cognitive perspective that has been applied by health psychologists to understand coping and distress in physical illness is relevant to the milder chronic discomforts of flushing.

### **References:**

- Arntz, A. & Schmidt, A. (1989) Perceived control and the experience of pain. In A. Steptoe & A. Appels (Eds) *Stress, Personal Control and Health* (131-162). Chichester, John Wiley.
- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979) *Cognitive therapy of depression*. New York: Guilford Press.
- Blalock, S.J., DeVellis, B.M., Holt, K. & Hahn, P.M. (1993) Coping with rheumatoid arthritis: is one problem the same as another? *Health Education Quarterly*, 20, 119-132.

- Brown, G.K., Nicassio, P.M., & Wallston, K. (1989) Pain coping strategies and depression in RA. *Journal of Consulting & Clinical Psychology*, 57, 652-657.
- Crombez, G., Eccleston, C., Baeyens, F & Eelen, P. (1998) When somatic information threatens, catastrophic thinking enhances attentional interference. *Pain*, 75, 187-198.
- Dennerstein, L., Dudley, E. & Burger, H. (1997) Well-being and the menopausal transition. *Journal of Psychosomatic Obstetrics and Gynecology*, 18 (2), 95-101.
- Haerkaepaeae, K., Jaervikoski, A. & Vakkari, T. (1996). Associations of locus of control beliefs with pain coping strategies and other pain-related cognitions in back pain patients. *British Journal of Health Psychology*, 1 (1), 51-63.
- Hunter, M.S. & Liao, K.L. (1995) A psychological analysis of menopausal hot flushes. *British Journal of Clinical Psychology*, 34, 589-599
- Hunter, M.S. & Liao, K.L. (1996) Evaluation of a four-session cognitive-behavioural intervention for menopausal hot flushes. *British Journal of Health Psychology*, 1 (2), 113- 126.
- Ivarsson, T., Spetz, A.C. & Hammar, M. (1998) Physical exercise and vasomotor symptoms in postmenopausal women. *Maturitas*, 29 (2), 139-146.
- Keefe, F.J., Brown, G.K., Wallston, K.A., & Caldwell, D.S. (1989) Coping with rheumatoid arthritis pain: catastrophising as a maladaptive strategy. *Pain*, 37, 51-56
- Kronenberg, F. (1990) Hot flashes: epidemiology and physiology. *Annals of the New York Academy of Science*, 592, 52-86.
- Liao, K.L., Hunter, M & Weinman, J (1995) Health-related behaviours and their correlates in a general population sample of 45-year old women. *Psychology and Health*, 10 (3), 171-184.

Keefe, F.J., Brown, G.K., Wallston, K.A., Caldwell, D. (1989) Coping with rheumatoid arthritis pain: catastrophising as a maladaptive strategy, *Pain*, 37, 51-56.

Kronenberg, F. (1990) Hot flashes: epidemiology and physiology. *Annals of the New York Academy of Science*, 592, 52-86.

Kronenberg, F. & Barnard, R.M. (1991) Modulation of menopausal hot flashes by ambient temperature. *J. Therm Biol* 17 43-49.

Manne, S.L. & Zautra, A.J. (1992) Coping with arthritis: current status and critique. *Arthritis & Rheumatism*, 35, 1273-1280.

Matthews, K.A. (1992) Myths and realities of the menopause. *Psychosomatic Medicine*, 54, 1-9.

Morse, C.A., Smith, A., Dennerstein, L., Green, A. Hopper, J. & Burger, H. (1994) The treatment-seeking woman at menopause. *Maturitas*, 18, 161-173.

Nedstrand., E., Wijma, K., Lindgren, M & Hammar, M. (1998) The relationship between stress-coping and vasomotor symptoms in postmenopausal women. *Maturitas*, 31 (1), 29-34.

Norman, P., Bennett, P., Smith, C & Murphy, S. (1998) Health locus of control and health behaviour. *Journal of Health Psychology*, 3 (2), 171-180.

Petrie, K.J. & Weinman, J.A. (Eds) (1997) *Perceptions of Health and Illness*. Amsterdam: Harwood Academic Publishers.

Pimm, T.J. (1997) Self-regulation and psycho-educational interventions for rheumatic disease. In K.J. Petrie & J.A. Weinman (Eds) *Perceptions of Health and Illness*. (p349-378). Amsterdam: Harwood Academic Publishers.

Radloff, L. (1977) The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1 (3), 385-401.

Reynolds, F. (1997) Perceived control over menopausal hot flushes: exploring the correlates of a standardised measure. *Maturitas*, 27, 215-221.

Reynolds, F. (1999) Some relationships between perceived control and women's reported coping strategies for menopausal hot flushes. *Maturitas*, 32, 25-32.

Reynolds, F. (in press) Relationships between catastrophic thoughts, perceived control and distress during menopausal hot flushes : exploring the correlates of a questionnaire measure. *Maturitas*.

Step toe, A. & Appels, A. (Eds) (1989) *Stress, Personal Control and Health*. Chichester, John Wiley.

Voda, A. (1981) Climacteric hot flush. *Maturitas*, 3, 73-90.

Wallston, K.A., Wallston, B.S., & DeVellis, R.F (1978) Development of the multidimensional health locus of control scale (MHLC). *Health Education Monographs*, 6, 160-170.

Wallston, K.A. (1989) Assessment of control in health-care settings. In A. Steptoe & A. Appels (Eds) *Stress, Personal Control and Health* (p85-106). Chichester, John Wiley.

Wijma, K., Melin, A., Nedstrand, E. & Hammar, M. (1997) Treatment of menopausal symptoms with applied relaxation: a pilot study. *Journal of Behavior Therapy & Experimental Psychiatry*, 28 (4), 251-261.

Woods, N.F. & Mitchell, E.S. (1997) Pathways to depressed mood for midlife women: observations from the Seattle midlife women's health study. *Research in Nursing and Health*, 20 (2), 119-129.



### Tables of Results

*Table 1: Flush frequency, flush-related distress, perceived control over hot flushes and catastrophic thoughts at Time 1 and Time 2: Means, standard deviations, correlations and tests of difference (t): N=20.*

Variable	Time 1 Mean (SD)	Time 2 Mean (SD)	Correlation	T
Flush frequency	9.8 (8.4)	3.5 (3.0)	0.79***	4.44 ***
Flush distress	5.7 (2.8)	3.7 (2.0)	0.49*	3.66**
Perceived Control Index (PCI)	34.9 (7.2)	42.0 (6.2)	0.53*	4.65***
Catastrophic Thoughts Questionnaire	18.2 (13.9)	10.5 (11.7)	0.49*	2.25*

\*\*\* p<0.001; \*\* p<0.01; \* p<0.05

*Table 2: Correlations among flush frequency, distress, perceived control, catastrophic thoughts and coping strategies at Time 2: N=20.*

	Flush frequency	Flush distress	Perceived control	Catastrophic Thoughts	Coping Strategies
Flush frequency	1.00	0.55**	-0.18	0.30	0.17
Flush Distress		1.00	-0.18	0.51*	0.49*
Perceived control			1.00	-0.51*	0.18
Catastrophic Thoughts				1.00	0.32
Coping strategies					1.00

\*\* p<0.01; \* p<0.05

*Table 3: Multidimensional Health Locus of Control Mean Scores (and SDs); N=20.*

There are six questions for each sub-scale ( internal, chance and powerful others), with a maximum score on each dimension of 36.

Internal LoC	External LoC (chance)	External LoC (powerful others)
24.05 (4.03)	16.40 (5.59)	14.80 (6.49)

*Table 4 : Correlations between health locus of control beliefs, depression, and flush-related measures at Time 2*

	Internal LOC	External Chance LOC	External Powerful Others LOC	Depression CES-D
Flush frequency	-0.35	-0.02	-0.03	0.12
Flush Distress	-0.04	-0.10	0.36	0.17
Perceived control (PCI)	0.47*	-0.60**	-0.04	-0.32
Catastrophic Thoughts (CTQ)	0.16	0.36	0.09	0.51*
Coping strategies Inventory	0.45*	-0.59**	0.09	-0.08
Depression CES-D	-0.18	0.27	0.25	

\*\* p<0.01; \* p<0.05