

Perceptions of control and improved psychological, physical, and social functioning in postmenopausal women

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Abstract

Throughout life, social messages about women's bodies put them at greater risk of specific psychological health conditions than men; yet little is known about what psychological factors can help promote mental health in older women. In this study, we examine how perceptions of control relate to perceptions of psychological health, in addition to physical health, and social functioning in a sample of postmenopausal women. Results suggest that increased perceptions of control relate to *improved* perceptions of health via a reduction in negative affect. Implications for promoting health and reducing gendered mental health disparities are discussed.

Keywords

elders, health promotion, health psychology, perceptions of control, women's health

Menopause is a biological transition, resulting in the complete cessation of the menstrual cycle in women with female reproductive organs (Gracia et al., 2005). Much research has been dedicated toward examining the overall health of women actively undergoing that transition (e.g. Dennerstein, 1996). Despite this body of literature, very little is known about the quality and functionality of women's psychological health during the last third of their lives, namely, the *postmenopausal* phase. Existing research tends to conceptualize postmenopausal women as a *clinical sample* by investigating the prevalence of significant medical conditions. For instance, research has examined hypoactive sexual desire disorder (HSDD; Leiblum et al., 2006), cardiovascular morbidity (Kim et al., 2005), osteoporosis (Brenneman et al., 2006), and breast cancer

(Carpenter et al., 1998) within this sample. An even smaller body of research has focused on postmenopausal women's psychological health. Most work has examined the link between hormone administration and significant mental health conditions such as dementia (Espeland et al., 2004), depression (Halbreich et al., 1995), and schizophrenia (Lindamer et al., 2001). Only a handful of studies have examined general psychological health of postmenopausal women. However, these were

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investigated within the context of exercise regimens or hormone replacement therapy (Asbury et al., 2006).

Altogether, there is a paucity of research dedicated to understanding the psychological health of postmenopausal women. We aim to close this *major* gap within the research.

Aging, psychological health, and reproduction

Women are at a disproportionately greater risk of certain psychological health conditions, such as depression, than men (Nolen-Hoeksema, 2001). Social messages about women's bodies have contributed to this mental health disparity and have the potential to exacerbate psychological health risks as women age (Afifi, 2007). Unlike men, women's bodies are objectified—or perceived as a collection of body parts—and valued for their appearance (Fredrickson and Roberts, 1997) and ability to reproduce, whereby women are socially prescribed to reproduce and their social “value” as an individual is located within that function (Russo, 1976). Social pressures about women's reproductive abilities can have damaging psychological consequences. The more women internalize objectifying social messages throughout their life, the greater they are at risk of psychological health problems (World Health Organization (WHO), 2002). Therefore, postmenopause is a necessary period to examine, because women have completely undergone a biological transition that removes all reproductive capabilities. This period eliminates women's reproductive value and heightens the potential for psychological health risks. In addition, there has been a call to empirically examine the psychological health of aging women, with a focus on mitigating gender disparities (Rodin and Ickovics, 1990). To address this, we focus on a sample of postmenopausal women and investigate how psychological factors could serve to *promote* various dimensions of their health, including psychological health, physical health, and social functioning.

Perceptions of control

There are important individual differences in perceptions of control or the belief that one has control over domains of their life (Rotter, 1954). These perceptions may not always be stable across one's life. Some research has suggested that perceptions of control tend to decline over age (Lachman et al., 2011), especially control perceptions in the domain of health (Lachman and Firth, 2004). Thus, it is critical to continue to examine perceptions of control, especially as one ages.

Perceptions of control and health

Perceptions of control have been directly linked to health outcomes. Research has found that individuals with greater perceived control are more likely to engage in physical behaviors that promote health (Berglund et al., 2014). Consequently, increased perceived control has been considered a health plus factor (Wallston et al., 1976). Although perceptions of control have been linked to engagement in behaviors, there is not much work examining how increased perceptions of control can relate to one's self-perceptions of physical health (Alogna, 1980). It is likely that increased perceptions of control would positively relate to increased perceptions of health. Furthermore, it is necessary to take the psychosocial context into account when considering control and perceptions of health. As previously mentioned, menopause is a biological transition that naturally occurs in women. Postmenopausal women have the unique shared experience of undergoing a salient physical change which is beyond their behavioral control. This life event can inform health perceptions in many ways (Bromberger and Matthews, 1996) due to multiple associated social, psychological, and physical factors.

Little work has looked at how perceptions of control relates to psychological health. There is evidence suggesting that increased perceptions of control negatively relate to stress (Corah, 1973) and depression (Grote et al., 2007). It is

necessary to investigate how perceptions of control can relate to other psychological health indicators to help *promote* health. In one study, increased perceptions of control related to an increase in psychological health through a decrease in negative affect, a variable indicating poor psychological health (Vargas et al., 2017). It is essential to examine this link in a different context. Thus, in this study, we plan to expand this body of literature by examining how perceptions of control relate to *increased* perceptions of health through a reduction in negative affect.

Perceptions of control and social functioning

Like perceptions of control, one's social functioning has been established as a significant plus factor toward promoting health outcomes (see Smith et al., 1994 for a meta-analysis). Social functioning refers to one's engagement with their social networks, including their maintenance and expansion of them (Hirschfeld et al., 2000). Some literature has investigated how perceptions of control and social factors impact health (e.g. Lachman et al., 2010). For instance, increased social ties help buffer stress (Cohen and Wills, 1985) and lead to increased informational, instrumental, and emotional support (Umberson et al., 2010). Only a handful of studies have considered how these two individual factors (i.e. control and social functioning) may be directly related to each other (Sandler and Lakey, 1982). It is necessary to further investigate why and how perceptions of control and social functioning relate, especially for women.

Control and social functioning are stereotyped as oppositional elements for women (Rudman, 1998). Control is an individual difference that is stereotyped as masculine, whereas social interdependence is stereotyped as feminine (Eagly and Steffen, 1984). Together, these are pitted against each other as a double bind, informing the way that individuals perceive women and informing the way women actively navigate between being one or the other (Diekmann and Eagly, 2000). In recent

years, control (i.e. agency) and social functioning (i.e. interdependence) are conceptualized as individual dimensions that can be simultaneously held within women to varying degrees, rather than zero-sum or oppositional elements (Abele and Wojciszke, 2007). Understanding how these two factors relate may have important health implications. Across several studies, individuals with greater perceived control reap greater psychological health outcomes (e.g. reduced stress) from their social networks, compared to individuals with less perceived control (Solomon et al., 1988). Despite the health implications of this relationship, the existing body of research on women's health has generally focused on either the effects of social functioning (e.g. Mitchell and Hodson, 1983) or control (Gourounti et al., 2012) but rarely examines how they relate (e.g. García et al., 2002), especially within samples of older women. In this study, we examine whether perceptions of control can positively relate to increased social functioning through a reduction in negative affect.

The current study

Taken together, in this study, we examine how perceptions of control relate to perceptions of psychological health, physical health, and social functioning in a sample of postmenopausal women. Consistent with the model proposed in Vargas et al. (2017), we predict that perceptions of control will be related to improved perceptions of physical health (H1), psychological health (H2), and social functioning (H3) through a reduction in negative affect.

Materials and methods

We used data from the Study of Women's Health Across the Nation (SWAN), a multi-site, longitudinal epidemiological study (Sutton-Tyrrell et al., 2014). The entire study included data from a total of 3302 women from 1994 through their 10th annual follow-up visit (2006–2008). Because we are interested in examining postmenopausal women, we used

data from the 10th annual follow-up visit ($n=2239$) when majority of the sample was postmenopausal (75%). The final dataset had data collected in multiple cities from Boston, MA to Los Angeles, CA. We excluded women who were not postmenopausal and excluded women who may have had their menopausal status shaped by a medical procedure (i.e. hysterectomy or oophorectomy). The final sample included 1681 women.

Measures

Perception of control. Participants indicated on a 5-point scale (1 = *Never* and 5 = *Very Often*) the extent to which they felt control in their life by responding to the following: "Felt unable to control important things in your life?" Control was recoded, and higher values indicate greater perceived control over one's own life.

Positive and negative affect schedule. The 20-item positive and negative affect schedule (PANAS) was used to measure positive and negative affect (Watson et al., 1988). Participants indicated on a 5-point scale (1 = *Very Slightly or Not at All* and 5 = *Extremely*) the extent to which they agreed with the scale statements on both dimensions of emotions. The 10 positive affect items were averaged into a measure of Positive Affect, and the 10 negative affect items were averaged into a single measure of Negative Affect. Both scales were reliable and higher scores on each dimension represent greater positive and negative affect, respectively.

Short form-36. The short form-36 (SF-36) was used to assess self-perceptions of physical and mental health across eight sub-scales (Ware and Sherbourne, 1992). For each scale, higher values indicate worse health. The eight sub-scales included the following: bodily pain, vitality, social functioning, role-emotional, mental health, general health, physical functioning, and role-physical. Dimensions using multiple Likert scales were standardized. These assess perceptions of physical health, psychological health, and social functioning.

Results

Participants

Majority of the sample identified as White (non-Hispanic; 49%), 29 percent identified as Black/African American, 11 percent identified as Japanese or Japanese American, and 10 percent identified as Chinese or Chinese American. The average age of women in the sample was 56.43 years (standard deviation (SD)=2.61), majority had a total family income (before taxes) of US\$100,000 or more, and majority were married (65%). We used data from Part A of the Questionnaire, about 93 percent of the sample completed the full self-administered questionnaire, while approximately 1 percent completed their questionnaire via phone interview or did an abbreviated questionnaire plus follow-up interview, and about 5 percent did an abbreviated questionnaire with no follow-up interview.

Descriptive statistics

In general, the sample indicated high ratings of perceptions of control ($M=4.16$, $SD=0.96$). Furthermore, the participants indicated moderate levels of Positive Affect ($M=3.35$, $SD=0.81$; $\alpha=.92$) and relatively low levels of Negative Affect ($M=1.54$, $SD=0.57$; $\alpha=.87$). For the SF-36, information about all eight sub dimensions, including descriptive statistics, sample items, and standardization, are included in Table 1.

Primary analyses

To examine our hypotheses, we used the PROCESS macro for SPSS (Hayes, 2012) and ran a mediation analysis for each dependent variable. In our results, we first present the test of significance, which is indicated by a significant indirect effect (Preacher and Hayes, 2004; Zhao et al., 2010), using bias-corrected bootstrapped confidence intervals (CIs). If the CI does not contain zero at the .05 level, the effect is statistically significant (Preacher and Hayes, 2004). Then, we report the unstandardized

Table 1. Descriptive statistics SF-36.

SF-subscale	Number of items	Sample item	Standardized (Z-scored)	α	M (SD)
Bodily pain	2	How much bodily pain have you had in the past 4 weeks?	Yes	N/A	0.00 (1.00)
Vitality	4	Did you feel worn out?	No	.86	3.00 (0.99)
Social functioning	2	During the past 4 weeks, how much time has your physical health or emotional health interfered with your social activities?	Yes	N/A	0.00 (1.00)
Role-emotional	3	During the past 4 weeks, have you cut down on activities/ work due to emotional problems (e.g. feeling anxious)? (Yes or No answer)	No	N/A	N/A
Mental health	5	During the past 4 weeks, have you been a nervous person?	No	.82	2.13 (0.76)
General health	5	In general, would you say your health is excellent, very good, good, fair, or poor?	Yes	.80	0.00 (1.00)
Physical functioning	10	How much does your health now limit you in these activities, (e.g. Walking several blocks)?	No	.92	1.38 (0.47)
Role-physical	4	During the past 4 weeks, did you have difficulty performing work or other activities? (Yes or No answer)	No	N/A	N/A

SF-36: short form-36; SD: standard deviation.

coefficient for each part of the indirect effect, followed by the coefficient for the direct effect (Zhao et al., 2010).

Hypothesis 1: perceptions of control on perceptions of physical health

Body pain. There was a statistically significant indirect effect of perceptions of control on a reduction of body pain perceptions ($b = -.14$, boot standard error (SE) = .02, 95% CI (-.18, -.10)). Within the indirect path, a unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 472) = -24.22$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in perceptions of pain ($b = .44$, $t(1, 471) = 8.39$, $p < .001$). The direct effect was significant ($b = -.09$, $t(1, 472) = -3.03$, $p < .01$), indicating that while controlling for the mediator, percep-

tions of control were associated with a reduction in perceptions of body pain.

Vitality. There was a statistically significant indirect effect of perceptions of control on a reduction of perceptions of poor vitality ($b = -.17$, boot SE = .03, CI (-.21, -.14)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 473) = -24.27$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in poor vitality ($b = .55$, $t(1, 472) = 11.39$, $p < .001$). Furthermore, the direct effect was significant ($b = -.23$, $t(1, 473) = -8.24$, $p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in perceptions of poor vitality.

General health. There was a statistically significant indirect effect of perceptions of control on

a reduction of negative perceptions of general health ($b = -.13$, boot SE = .02, 95% CI (-.17, -.10)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 474) = -24.24$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in negative perceptions of general health ($b = .42$, $t(1, 473) = 8.28$, $p < .001$). Furthermore, the direct effect was significant ($b = -.13$, $t(1, 473) = -4.46$, $p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative perceptions of general health.

Physical functioning. There was a statistically significant indirect effect of perceptions of control on a reduction of negative perceptions of physical functioning ($b = -.03$, boot SE = .01, 95% CI (-.05, -.02)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 471) = -24.24$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in negative perceptions of physical functioning ($b = .10$, $t(1, 473) = 3.99$, $p < .001$). Furthermore, the direct effect was significant ($b = -.04$, $t(1, 473) = -2.99$, $p < .01$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative perceptions of physical functioning.

Role-physical. There was a statistically significant indirect effect of perceptions of control on a reduction of negative perceptions of role-physical health ($b = -.14$, boot SE = .03, 95% CI (-.20, -.09)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 474) = -24.24$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in negative perceptions of role-physical health ($b = .45$, $t(1, 473) = 6.41$, $p < .001$). The direct effect was significant ($b = -.24$, $t(1, 473) = -5.91$, $p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative perceptions of role-physical health.

Hypothesis 2: perceptions of control on perceptions of psychological health

Role-emotional. There was a statistically significant indirect effect of perceptions of control on a reduction of negative perceptions of role-emotional health ($b = -.18$, boot SE = .02, 95% CI (-.22, -.14)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 471) = -24.21$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in negative perceptions of role-emotional health ($b = .57$, $t(1, 470) = 13.11$, $p < .001$). The direct effect was significant ($b = -.19$, $t(1, 471) = -7.34$, $p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative perceptions of role-emotional health.

Mental health. There was a statistically significant indirect effect of perceptions of control on a reduction of negative perceptions of mental health ($b = -.24$, boot SE = .02, 95% CI (-.27, -.20)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 474) = -24.24$, $p < .001$). Holding control constant, a unit increase in negative affect was associated with a significant increase in negative perceptions of mental health ($b = .76$, $t(1, 473) = 26.27$, $p < .001$). The direct effect was significant ($b = -.18$, $t(1, 473) = -10.78$, $p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative perceptions of mental health.

Hypothesis 3: perceptions of control on perceptions of social functioning

Social functioning. There was a statistically significant indirect effect of perceptions of control on a reduction of negative social functioning ($b = -.20$, boot SE = .02, 95% CI (-.25, -.17)). A unit increase in perceptions of control was related to a decrease in negative affect ($b = -.31$, $t(1, 474) = -24.24$, $p < .001$). Holding control constant, a unit increase in negative affect was

associated with a significant increase in negative social functioning ($b = .65, t(1, 473) = 14.04, p < .001$). The direct effect was significant ($b = -.25, t(1, 473) = -9.14, p < .001$), indicating that while controlling for the mediator, perceptions of control were associated with a reduction in negative social functioning.

Discussion

This study examined the relationship between perceptions of control and perceptions of psychological health, physical health, and social functioning in a sample of postmenopausal women. We found support for hypothesis 1, such that increased perceptions of control related to improved perceptions of physical health through reductions in negative affect. These findings are among the first to relate control to perceptions of physical health and to consider postmenopausal women as a non-clinical sample. Our results demonstrate that control may be the critical antecedent necessary in promoting health in postmenopausal women. For instance, perceptions of physical health may be related to increased health promotional behaviors, which in turn may bolster health outcomes.

Increasing women's perceptions of control has implications for health care in the United States. Women represent half of the population, and compared to men, women are more likely to live longer, more likely to go to the doctor, and are more likely to rely on long-term medical care (Briscoe, 1987; Centers for Disease Control and Prevention (CDC), 2016). Thus, health-care organizations must attend to the health of the average woman more frequently and for many more years, as compared to the average man. Promoting perceptions of control in women could help increase the likelihood of women adhering to their health-care plans and reduce preventable diseases; these factors are associated with a reduction in medical costs (Fries et al., 1993). For these reasons, it is necessary for researchers to continue investigating factors that serve to benefit postmenopausal women's health.

In line with hypothesis 2, increased perceptions of control were related to improved perceptions of psychological health. These findings contribute to the scant body of literature on perceptions of control on psychological health and postmenopausal women's psychological health more specifically. Importantly, the current findings may help establish a mechanism to help promote psychological health. Since there is a relationship between perceptions of control and increased psychological health perceptions, it is possible that increased perceptions of control would help mitigate prevalent psychological health conditions, such as depression. For example, perceptions of control may function as a psychological *protective factor* against social messages that worsen psychological health. As previously mentioned, it is psychologically damaging for women to internalize messages that their "value" is lost after their reproductive capabilities have stopped (i.e. postmenopause). In addition to dismantling the messages altogether, it is possible that increased perceptions of control may help reduce the internalization of persistent social messages, even well before women undergo menopause. Future research should investigate this link. Similarly, an older heterosexual woman is more likely to outlive their male spouse and must cope with depression and stressors associated with the passing of a spouse (Umberson et al., 1992). It is possible that increased perceptions of control may also function as a protective factor for this life event. Since women are at a disproportionately greater risk of depression than men, this work has implications for reducing gendered mental health disparities.

Hypothesis 3 was supported, such that increased perceptions of control were related to improved social functioning. These findings underscore the idea that the personal control and social functioning can be considered as simultaneous independent dimensions in women. Researchers from all disciplines need to utilize this approach in research involving women participants. Furthermore, postmenopause is a period that encompasses the last third of women's lives. This is a substantial amount of time, and it is important that these findings

are translated into pragmatic solutions to help promote women's health for the rest of their lives. While we conceptualized perceptions of control as a stable individual-level variable, research has found that perceptions of control can operate as a state as well; this suggests that control can fluctuate because of immediate contextual and interpersonal factors. Former research has illustrated a shortcoming of this finding. Women currently have less power in society, and compared to men, their individual perceptions of control are at risk. However, perceptions of control can be *augmented* within non-discriminatory interpersonal contexts. Individuals such as health-care providers should actively promote postmenopausal women's perceptions of control. For example, health-care providers can permit them the space necessary to discuss their questions and treating them with respect. Health-care providers could consider asking about women's perceptions of control, as part of a larger health assessment or checkup.

Limitations

This study included a sample of postmenopausal women across various cities. However, we did not look at how multiple dimensions of control impact these outcomes. Future research should examine how "domain specific" areas of perceptions of control individually predict each dimension of health. In addition, each of the mediation analyses within this study demonstrated a significant direct effect, in the presence of a significant indirect effect, implying that other variables may exist in the current model, such as cortisol. Future research could validate the subjective health perceptions by considering biological indicators of health, such as telomere length. Telomeres are DNA caps located at the end of chromosomes, and they protect chromosomes from deterioration (Muzumdar and Atzmon, 2012). As individuals age, the length of telomeres decreases. However, the rate of decline in telomere length is exacerbated with poor physical and psychological health (e.g. Epel et al., 2004). Furthermore, shortened telomere length is associated with negative health

conditions such as myocardial infarction (Zee et al., 2009). It is possible that the model in this study could predict an individual's telomere length, which would be indicative of an individual's health status.

Conclusion

The results reveal a significant relationship between perceptions of control and increased perceptions of psychological, physical, and social health for postmenopausal women. This study is among the first to examine how perceptions of control may help promote health perceptions of postmenopausal women and adds to a limited body of literature on the psychological health of postmenopausal women.

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