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The influence of mastery on mother's health in middle years: Moderating role of stressful life context

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Abstract

Using data from 416 middle-aged mothers gathered over the course of a decade, this study examined the influence of mastery trajectories (the initial level and change), on change in physical health. Mastery is defined as one's ability to control and influence his/her life and environment to reach a desired outcome or goal. Both the initial level and change in mastery from 1991 to 1994 were associated with decreased physical health problems over the middle years (1991-2001). Contextual moderation of this association by stressful life contexts including negative life events (NLEs) and work-family conflict (WFC) were investigated. Moderation analysis showed that under conditions of low contextual life stressors, the level and increase in mastery significantly contributed to decreases in physical health problems in middle-aged mothers. Alternatively, conditions of high contextual life stressors inhibited the ability of mastery to influence physical health of mothers, suggesting that the positive health impact of mastery on physical health is mitigated by stressful life experiences. Implications for the need to maintain important personal resources, such as mastery, during times of stress are discussed.

Keywords

Personal Control; Coping Strategies; Physical Health; Stress Coping; Work Family Balance/
Conflict; Stress

Researchers have shown an increasing interest in positive individual characteristics that influence personal health (Cohen & Pressman, 2006; Pressman & Cohen, 2005). Previous research has directly linked individual psychological resources, such as an individual's sense of mastery, to mental and physical health across adulthood and older age (Matthews &

Gallow, 2011; Wickrama, Surjadi, & Lorenz, 2008, Wickrama, O'Neal & Lee, 2015). The benefits of psychological resources have been linked to less severe symptoms of diseases (Cohen, Doyle, Turner, Alper, & Skoner, 2003), better reports of overall health (Roysamb 2003), reduced morbidity (Cohen et al., 2003), as well as, lower mortality rates in elderly populations (Kawamoto & Doi, 2002). Prior research has found that positive psychological characteristics can be salient health resources for middle-aged "baby boomers" approaching their later years. This is important, because midlife is a life event-dense developmental period during which the incidence of diseases increases (Martikainen, Stansfeld, Hemingway, & Marmot, 1999; Siegler, 1997). Psychological resources (such as, mastery) can be defined as skills, beliefs, or individual personality factors that not only enable individuals to cope or manage stress (Donaldson, Csikszentmihalyi, & Nakamura, 2011), but also contribute to better health through behavioral, emotional, and physiological mechanisms as we discuss below (Mausbach et al., 2007; Pressman et al., 2005; Reynolds et al., 2007; Ryff, Singer, & Love, 2004).

We posit that an individual's sense of mastery is an important psychological resource which may directly influence an individual's physical health. Mastery represents beliefs regarding one's ability to control and influence his/her life and environment to obtain a desired outcome or goal (Pearlin, Menaghan, & Mullin, 1981; Windsor, Antsey, Butterworth, & Rodgers 2008). Previous research has shown that possessing higher levels of mastery is positively associated with individual physical health (Infura & Mayer, 2015; Turiano, Chapman, Agrigoroaei, Infura, & Lachman, 2014; Wickrama, et al., 2008). Mastery may influence individual physical health outcomes through direct physiological processes involving neuroendocrine and autonomic functioning independent from the effects of other life experiences (Pressman et al., 2005). In addition, positive psychological characteristics, including mastery, have been shown to beneficially influence health outcomes through psychosocial mechanisms (e.g. health promoting behavior, greater social connectedness, and perceived social support) (Steptoe, & Wardle, 2001).

However, previous studies of stress and health most often consider psychological resources, such as mastery, as a protective factor moderating the adverse health influences of stressful circumstances and often disregard its direct additive influence on health outcomes (Femia, Zarit, Johansson 2001; Infura, Gerstorf, & Zarit, 2011; Infura et al., 2015; Surtees et al., 2010). More importantly, previous research suggests that varying life circumstances may deteriorate or enhance the association between mastery and physical. For example, stressful situations may disrupt the pathways connecting mastery to physical health (Noor, 2002). That is, under stressful life contexts, even if an individual possesses a high degree of mastery, he or she may be less likely or less capable of utilizing mastery skills. Additionally, the effectiveness of mastery may be diminished due to psychological or environmental constraints associated with stressful life events. Thus, we argue that the beneficial influence of mastery on health may be attenuated in times of high stress.

In the current study we focus on the additive influence of mastery on physical health and the moderation of this association by stressful life contexts, including negative life events (NLEs) and work-family conflict (WFC) in a sample of middle-aged mothers. To our knowledge, this is the only study to date that has examined the contextual factors that may

interact with mastery to influence physical health over time. The middle-aged mothers represented in our sample may be particularly vulnerable to the effects of NLEs and WFC for several reasons. First, the experience of NLEs is often stressful for any individual and may have lasting effects on an individual's health by increasing the chances of vulnerability to later life illnesses through health-related stress processes (Cairney, Boyle, Offord, & Racine, 2003). However, as past research suggests, high amounts of family or life stress combined with high amounts of work stress tend to have more detrimental impacts on the psychological resources of women compared to men (Noor 2002; Norton, Gupta, Stephens, Martire, & Townsend, 2005). Second, this sample incorporates both married and single women. The effects of WFC may be amplified for single women as they have less help at home to balance work and family life expectations and demands (Harknett 2006; Muhajarine, Janzen, & Dziak, 2010). Additionally, our sample focuses on mothers who by 2001 are entering mid-life. Previous research has suggested that some psychological resources, such as mastery, may become more difficult to maintain with age (Helvik et al., 2016; Cairney & Kraus, 2008; Mirwosky, 1997; Wolinsky & Stump, 1996). Finally, the sample was designed to focus on families in rural Iowa counties that were particularly affected by the farm crisis of the 1980s. Thus, the mothers in this sample may have faced multiple and varied contextual stressors, providing a unique opportunity to examine the moderating impact of contextual stressors on the association between mastery and later physical health outcomes.

In the current study, we focus on mastery trajectories of middle-aged mothers over time. Specifically, we will examine (a) if mastery trajectories (the initial level and rate of change) over the early middle years will have a direct impact on women's physical, illness, while controlling for prior illness. Additionally, we will test, (b) the moderating role of several stressful life circumstances that may have an impact on the relationship between mastery and physical illness. To test our hypotheses, we use longitudinal prospective data of 416 mothers over a decade who participated in the Iowa Midlife and Transitions Project (MTP).

Mastery and Physical Health Outcomes

As noted above, several studies have linked higher levels of mastery with positive physical health outcomes (Infura et al., 2015; Turiano et al., 2014; White et al., 2012; Wickrama, Surjadi, Lorenz, & Elder, 2008). Individuals who possess feelings of mastery sense that they have more control over important aspects of their life, allowing the individual to be more cognitively, emotionally, and behaviorally attuned with the decisions that they make (Pearlin & Piolo, 2003). Greater sense of mastery may enable several mechanisms that contribute to better physical health (Cohen et al., 2006; Pressman et al., 2005). First, mastery may influence physical health outcomes by encouraging healthy lifestyles. That is, individuals who feel in control of their lives may initiate and maintain better health behaviors and adhere to medical regimens (Pressman et al., 2005). Second, research has also demonstrated that mastery is associated with positive feelings about work and social relationships (Reynolds et al., 2007), including marital relationships (Martire, Stephens, & Townsend, 1998), which have been shown to contribute to better physical health (Folkman, 2013). Third, a sense of mastery increases positive feelings and beliefs that may have a direct effect on health through enhanced immune functioning and neuroendocrine activation (e.g.

hypothalamic-pituitary-adrenal axis or sympathetic nervous system activation, see Mausbach et al., 2007; Ryff, et al., 2004).

Contextual Moderation of Health Effect of Mastery

Stress research has documented that stressful life experiences, such as NLEs (Lorenze et al., 2006) and WFC (Jansen, Kant, Kristensen, & Nijhuis, 2003; Thomas & Ganster, 1995), have direct physical health consequences. Additionally, biobehavioral research has shown that repeated and chronic stress experiences result in physical illness through physiological pathways (i.e. over activation of neuroendocrine, autonomic nervous system and immune functioning, see Seeman, McEwen, Rowe, & Singer, 2001). As shown in figure 1, in addition to the direct additive influence of stressful circumstances on physical health, we argue that contemporary stressful life contexts may play a moderating role by weakening the association between mastery and health outcomes. That is, we expect that under conditions of low-stressful life contexts (or positive life contexts), mastery is effective in enhancing physical health. However, under conditions of high-stress we expect that mastery will be ineffective in enhancing physical health.

This moderating effect may operate through several mechanisms. First, while in high stressful life contexts, individuals may conserve their personal resources, such as mastery, to such an extent that available resources are not utilized, as suggested by conservation of resource theory (COR, Hobfoll, 1989). The basic tenet of COR theory specifies that individuals are motivated to obtain, retain, foster, and protect those things that they find of value (Westman et al., 2004). COR theory argues that the loss of resources is more detrimental than resource gain is beneficial. Even under conditions of equal loss and gain, the loss of resources will have a greater impact on the individual. We expand on this argument by suggesting that in times of high stress, individuals will tend to conserve psychological resources, such as mastery, even during times when these individual resources could be utilized to abate the harmful effects of stressful life contexts. Individuals may conserve resources under times of high stress to avoid total resource loss. Hobfoll (2001) contends that as an individual's resources begin to dwindle, she/he will defend what resources they have left, guarding resources instead of investing them. Thus, under stressful conditions individuals may not invest mastery skills in health promoting mechanisms.

Second, previous research has shown that the direct health enhancing effects of mastery may be neutralized by stressful life contexts. For example, consistently high levels of disagreements invoke physiological, psychological, behavioral, and cognitive arousal that may neutralize the direct beneficial physiological influence of mastery (McEwen & Gianaros, 2010).

Third, stressors may hinder behavioral and psychosocial mechanisms through which mastery is associated with better health. When individuals are inundated with stressors this may hinder one's ability to successfully employ mastery skills due to diminishing motivational capacities or altering thought patterns (Bandura, 1989; Infura et al., 2015). For example, couples who experience elevated stress levels are less likely to engage in health promoting

joint activities that are associated with mastery, such as, walking/exercising together or close, warm interactions (Roepke & Grant, 2011).

Conversely, previous research has suggested that when individuals have a high degree of control over their circumstances (i.e. low stressful contexts), higher levels of mastery may be more beneficial in attaining one's goals than in situations outside of one's control (i.e. high stressful conditions) (White et al., 2012). That is, when an individual feels more control over their life circumstances this can provide them with the means and skills necessary to engage in positive health behaviors, as well as providing positive beliefs and motivation to engage in health promoting behaviors (Bandura, 2004).

Stressful Life Contexts

In the present study, we will specifically focus on stressful family contexts by focusing on negative events involving the self or family and work-family conflicts. In this study, we focus on these domains because they capture a wide array of stressors that are often experienced during the middle years, and because they are stressors that may be pertinent for women's psychological resources and health.

Negative life events (NLEs)

Midlife is characterized by a complex interplay of multiple roles (Lachman & James, 1997). Consistent with the notion of "timing and sequence of events" in the life course perspective (Elder & Geile, 2009), previous studies suggest that midlife is dense with important life events (or non-events) that may be stressful. Additionally, changes related to multiple roles, such as work (e.g. promotions or lack thereof), aging parents (e.g. parental care), children (e.g. educational and occupational attainment/failures), and marriage (e.g. marital disruptions, divorce) may additively cause stress (Grundy & Heneretta, 2006; Miller, 1981). Both men and women experience these stressors; however, this study focuses on the experiences of women during midlife. In the study's cohort, women often provided care for children and aging parents, managed careers, and maintained romantic relationships; thus, these women balance multiple roles in their day-to-day lives. Additionally, many of these women fall within the so-called "sandwich generation" (Grundy et al., 2006; Miller, 1981). This generation faces the challenge of providing a substantial amount of resources to both children and aging parents, yet they often receive very few resources in return (Miller, 1981). The experience of NLEs may be particularly daunting to this group of individuals as resources may be more limited, and unexpected stressful experiences may be more challenging to overcome (Moos, Brennan, Schute, & Moos, 2006). As previous research has suggested, as individuals age, the risk of experiencing NLEs becomes higher. Thus, we expect that over time, individuals in this sample may begin to report increased numbers of NLEs (Grundy et al. 2004). As discussed further above, we expect that in addition to the direct influence of NLEs on health, NLEs will inhibit mastery-related positive health processes.

Work-family conflict (WFC)

Women have been entering the workforce at a much more rapid pace than before (Frone, Russell, & Barnes, 1996; Noor, 2002). With the influx in dual earner families, many women work fulltime and continue to spend time performing household duties and chores, sometimes at a higher rate than men (Bianchi, Milkie, Sayer, & Robinson, 2000). Work and family environments are some of the most salient contexts for adult health and development. Thus, stress from WFC may reduce the contribution of mastery to physical health outcomes (Moen & Wethington, 1999). Role conflict theory states that individuals are more likely to experience strain when they encounter conflict between roles. Greenhaus and colleagues (2006) suggest that competing family and job demands can lead to further strain by generating negative emotions and life dissatisfaction. Findings regarding whether WFC increases, stabilizes, or diminishes overtime has so far been inconsistent. Research generally agrees that WFC should decline as adults enter later midlife and begin the “empty nest” phase. However, as more adults remain in the workforce into midlife and later life, there is uncertainty about the stability of WFC (Allen & Finkelstein, 2014). In addition to direct adverse health influence, and similar to that of NLEs, we expect that WFC may inhibit or moderate a mastery-related positive health processes.

Specific Hypotheses

Building on previous theoretical and empirical findings, this study examines the relationship between older women’s initial level and change of mastery scores and self-reported illnesses seven years later. Additionally, we consider the moderating effect of negative life events and work-family. The specific study hypotheses are as follows:

1. Mastery will have a beneficial influence on women’s physical health outcomes reported seven years later after controlling for stressful life experiences (NLEs and WFC).
2. Contextual life stress will moderate the association between mastery and physical health. That is, for women with high levels of contextual stress, the relationship between mastery and physical illness will be mitigated. For women under low levels of contextual stress, the relationship between mastery and physical illness will be strong.

Method

To evaluate these hypotheses, we use data from the Iowa Midlife Transitions Project (MTP), a decade-long panel study of rural families from a cluster of eight counties in north central Iowa that closely mirror the economic diversity of the rural Midwest. The present study uses 416 women (both married and single). These families were originally part of the Iowa Youth and Families Project (IYFP) (Conger & Elder, 1994) and the Iowa Single Parent Project (ISPP) (Simons, 1996). The IYFP began in 1989 as a study of rural couples with two children, at least one of whom was a seventh grader in 1989. The ISPP was integrated into the IYFP two years later by adding 102 recently divorced mothers. Families meeting the selection criteria were enumerated through contacts with public and private schools and then randomly selected and recruited into the study, with 78 percent of the married couples and

99 percent of the single mothers agreeing to participate (Conger and Elder 1994; Simons 1996). The 416 families in this study are those who participated in the MTP in 1991, 1992, 1994, and 2001 (86% of the 484). Figure 2 presents a visual representation, or flow chart, of the data collections procedures.

At the first wave of data collection, married women in the sample had been married for at least 14 years, and on average had three children. 76% of the women were employed (of these, 66% worked more than 20 hours a week). Median yearly income for these women was \$10,000, and the average occupational prestige scores was a 34 out of 100 (Nakao & Treas, 1990). The median age for women was 37 years in 1991, and median level of education was 13 years. Women who were originally from the IYFP sample (86 percent retention) were marginally more likely to stay in the study than the single mothers (79 percent). As attrition analysis, we estimated that those who dropped out of the panel were slightly younger ($M = 38.9$ vs. $M = 39.9$ years of age; $t(5) = 2.03$, $p < .01$), less well educated ($M = 12.7$ vs. $M = 13.5$ years of school; $t(5) = 4.20$, $p < .001$), and had significantly lower annual gross family income ($M = 26,631$ vs. $M = 36,134$; $t(5) = 2.76$, $p < .01$) in 1991. We found no other significant differences, including baseline self-reported health.

Measures

Mastery—Mastery was measured using the personal mastery scale in 1991, 1992, and 1994 (Pearlin et al., 1981). Mothers were asked to respond to a 5-point scale (1 = *strongly agree*, 5 = *strongly disagree*) to statements such as “sometimes I feel that I’m being pushed around in life,” “I have little control over things that happen in my life,” and “what happens to me in the future mostly depends on me.” Responses were coded such that higher scores reflected higher mastery. The internal consistencies ranged from .60 to .71 between the years of 1991 and 1994.

Self-reported physical illness—In 2001 respondents were presented with a list of 76 health conditions (46 from the original MTP and an additional 30 age-appropriate illnesses added in 2001) and asked whether they “had any problems with any of the symptoms or diseases listed” during the past 12 months. The illnesses ranged from relatively minor conditions, such as the common cold and sore throat, to more severe diseases, such as heart conditions, diabetes, and cancer. The number of reported illnesses was summed to create the measure of self-reported physical illness. The internal consistency for mothers was .56 in 1991 and was .71 in 2001. In previous applications, this measure has been shown to have good predictive validity (Wickrama, Hwa, Lorenz, Conger, & Surjadi, 2010; Wickrama, Klopach, O’Neal, Beach, & Neppl, 2017).

Negative Life Events—The measure of NLEs was constructed by summing mothers’ “yes” responses in the years 1991, 1992, and 1994 to a list of economic problems and NLEs adapted from Dohrenwend, Krasnoff, Askenasy, and Dohrenwend (1978). The measure of negative life events was constructed by summing mothers’ “yes” responses in the years 1991, 1992, and 1994. This measure consisted of 51 stressful events related to oneself, children, parents, and one’s entire family, such as the death of family member, being robbed or assaulted, and getting involved in a lawsuit. The mean number of NLEs experienced was

7.03 with a minimum of 0 and a maximum of 22. These items were then mean scored across the three-time points and dichotomized creating high and low frequencies of negative life events (mean split). The internal consistencies ranged from .61 - .63 for the years 1991, 1992, and 1994.

Work-Family Conflict—To assess WFC, mothers responded to two questions: “How often do the demands of your job (or jobs) interfere with your family life” and “How often do the demands of your family life interfere with your job (or jobs).” Items were scored on a 4-point scale (1 = often to 4 = never. Items were reverse coded so that lower numbers reported lower amounts of interference and higher numbers reported higher amounts of interference. These items were then mean scored across the three-time points and dichotomized creating high and low frequencies of WFC (mean split). Internal consistencies for mothers were .62 – .65 for the years 1991, 1992, and 1994.

Analyses

All models for this study were estimated using AMOS (AMOS 23, Arbuckle, 2014). To assess the severity and change in mothers’ mastery over the middle years, we estimated univariate growth curves in an SEM framework. To test the first hypothesis, the level and slope of growth curves for mothers’ mastery in the middle years were used to predict self-reported illness in the later middle years, after controlling for NLEs and WFC. The initial level and slope of mastery were correlated with these controls in the tested model.

Finally, to test the moderation of contextual stressors, separate analyses were conducted to determine how associations within the model differed under conditions of high and low NLEs and WFC. Women’s scores on NLEs and WFC were averaged across the years 1991, 1992, and 1994. Women who were above the mean were scored as high frequency while those at or below the mean were scored as low frequency (mean split). The number of mothers who fell into the low category of NLEs was 285 ($N = 73$ in the high category). The number who fell into the low category for WFC was $n = 168$ ($N = 135$ for the high category). A significance level of $p < .05$ was used to determine the significance of the findings, although values close to .05 are reported below as marginally significant. A range of fit indices were used to evaluate the fit of the models, including the chi-square statistic, the Cumulative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). For the chi-square fit statistic, the model is thought to fit the data well when the chi-square divided by the degrees of freedom is below 3.0 (Carmines & McIver, 1981). The model is believed to fit the data well when the CFI value is near or greater than .95 and the RMSEA value is near or less than .06 (Hu & Bentler, 1999).

Results

Zero-Order Correlations and Summary Statistics

Table 1 shows the means, standard deviations, and correlations among the study variables. At all three-time points (1991, 1992, and 1994) mothers’ mastery values were significantly correlated with one another ($p < .001$). Additionally, at all three-time points, mothers’ mastery was significantly and negatively correlated with future physical illness ($p < .001$),

suggesting that higher levels of mastery may decrease physical illness. Mothers' mastery was also negatively correlated with NLEs at all time points (1991, 1992, and 1994) ($p < .001$). Furthermore, mothers' physical illness in 2001 was significantly associated with NLEs at all time points. The mean level of mastery increased between the years of 1991 and 1992 and dipped slightly in 1994.

Univariate Growth Curve

The univariate latent growth curve model for women's mastery (not shown) had acceptable model fit, with a chi-square of 38.67 with one degree of freedom, a CFI of 0.91, and an RMSEA 0.08. A linear growth curve model fit the data better than a model with a quadratic growth factor. The intercept for women's mastery had significant mean ($M (sd) = 3.52 (.03)$, $p < .001$) and variance ($var (sd) = .22 (.03)$, $p < .001$). The mean for the slope (or rate of change) of mastery also had a significant mean ($M (sd) = .09 (.01)$, $p < .001$) and variance ($var (sd) = .03 (.01)$, $p < .05$) suggesting there is significant variation among the women in the sample in terms of their initial level and changes in mastery over these four years. The intercept and slope did not significantly covary.

Testing Study Hypotheses

To assess hypothesis 1, we performed a growth curve analysis testing whether mothers' initial level and rate of change in mastery were significantly associated with physical illness in 2001 while controlling for previous stressful contexts and physical illness in 1991. This model fit the data well ($\chi^2 (df) = 48.22(7)$, $p < .001$, CFI = .92, RMSEA [90% CI] = .09 [.06 to .12]). As shown in Figure 3, the initial level and slope of mastery had a marginally significant impact on physical illness in the later middle years (unstandardized, $b = -0.11$ and $b = -0.14$, $p = 0.07$, standardized, $\beta = -0.51$, SE = 0.30 and $\beta = -0.85$, SE = 0.99, for the level and slope, respectively). All controls, except for WFC, were significantly related to physical illness in 2001 (unstandardized, $b = 0.39$ and $b = 0.16$, $p < .001$, standardized $\beta = 0.38$, SE = 0.05 and $\beta = 0.16$, SE = 0.05, for prior illness and NLEs, respectively). Also, NLE and WFC were significantly correlated with the initial level and slope of mastery ($p < .05$). These findings represent the cumulative effect of mothers' early mastery on physical illness over the later middle years—i.e. the influence of mastery on illness over time. This model explained 21% of the variance in mothers' physical illness in 2001.

Testing Moderation Effects

Based on previous empirical and theoretical work, we argued that stressful contexts may inhibit mastery's protective effect on physical health; thus, two moderation analyses were tested using high and low (mean split) NLEs and WFC (figures 4a-b). The NLEs model fit the data well ($\chi^2 (df) = 5.55(2)$, $p = 0.06$, CFI = 0.99, RMSEA [90% CI] = 0.06 [0.03 to 0.09]). Under conditions of high NLEs (more than mean average of 1991 more than mean average of 1992, and 1994), the association between mastery and physical illness was diminished (unstandardized, $b = -0.30$, $p = 0.30$, and $b = -0.08$, $p = 0.62$, standardized, $\beta = -0.89$, SE = 0.39 and $\beta = -0.40$, SE = 0.69, for level and slope respectively). That is, mastery was unable to exert positive influences on health when women reported experiencing a high number of NLEs. Whereas in the low-NLEs model, the initial level and increases (slope) in mastery were significantly associated with fewer physical illnesses in

2001 (unstandardized, $b = -0.24$, $p = 0.02$, and $b = -0.31$, $p = 0.003$, standardized, $\beta = -0.95$, $SE = 0.42$ and $\beta = -0.94$, and $SE = 0.76$, for the initial level and rate of change). These findings suggest that when these women reported experiencing a low number of NLEs, mastery skills were utilized effectively to produce positive health outcomes.

The WFC model fit the data adequately ($\chi^2(df) = 1.80(2)$ $p = 0.03$, CFI = 0.94, RMSEA [90% CI] = 0.05 [0.03 to 0.08]). Results for women with high WFC were similar to those for NLEs, suggesting that under high amounts of WFC, mastery was unable to exert a positive influence on physical illness (unstandardized, $b = -0.14$, $p = 0.54$ and $b = -0.02$, $p = 0.25$, standardized, $\beta = -0.21$, $SE = 0.34$ and $\beta = -0.90$, $SE = 0.79$, for the level and slope respectively). However, for women with low WFC, the initial level and increases in mastery significantly was significantly associated with fewer physical illnesses (unstandardized, $b = -0.15$, $p = 0.05$ and $b = -0.21$, $p = 0.04$, standardized, $\beta = -0.81$, $SE = 0.46$ and $\beta = -0.60$, $SE = 0.85$, for the level and slope respectively). The model explained 18% of the variance in women's illness count in 2001.

Additionally, chi-square difference tests were performed to examine the statistical significance of NLEs and WFC as moderators. For the NLEs model we compared an unconstrained model where estimates were free to vary depending on NLEs level (high versus low) to a constrained model where the initial level and rate of change paths were constrained to be equal. The first model fit the data significantly better than the constrained model ($\chi^2(df) = 49.05(8)$, $p < .001$). Wald tests comparing individual paths between the two models were all significant ($p < .001$). When comparing an unconstrained model to a constrained model for high and low WFC, similar to the test above for NLEs, the unconstrained model fit the data significantly better than the constrained model ($\chi^2(df) = 52.77(8)$, $p < .001$). Wald tests comparing individual paths between the two models were all significant ($p < .001$). These comparisons of constrained and unconstrained models suggest that the moderators of WFC and NLE had a significant effect on the relationship between women's mastery and later reported physical illness.

Discussion

This study addressed gaps in the literature on the influence of mastery trajectories on later physical illness. To date much of past research has focused solely on psychological resources, such as mastery, as a moderating or mediating factor of the relationship between stress and health outcomes (Infura et al., 2015; Turiano et al., 2014). Rarely has research focused on the direct, positive influences that psychological resources may have on physical illness. A growing body of literature suggests that positive psychological states, such as possessing mastery, can have direct and indirect effects on physical illness outcomes (Cohen et al., 2006; Pressman et al., 2005). However, there is a lack of clarity about how stressful contexts change the relationship between mastery and health. Some research has suggested that psychological resources can prevail over stressful contexts and positively influence individual's health outcomes (Noor, 2001). Other research has suggested that stressful contexts may deteriorate positive effects of psychological resources on health (Lapierre & Allen, 2012). We argue that under high stressful contexts individuals are less likely and/or less capable of utilizing positive psychological resources, such as mastery, due to

psychological and environmental constraints. To the best of our knowledge, no other study to date has examined this argument.

Specifically, this study examined first, the effect of the initial level and increases in the psychological resource of mastery on physical illness of middle-to-later aged mothers. Second, the moderating effects of two contextual factors were considered. Results from this study suggest that the initial level and changes in mastery had a marginally positive impact on health, while controlling for previous illness and stressful contexts. This is consistent with previous research suggesting that positive psychological characteristics may influence physical illness through physiological and psychosocial mechanisms (Pressman et al., 2005; Steptoe et al., 2001). Positive psychological states may affect health outcomes through (a) behavioral (Folkman & Lazarus, 1980), (b) cognitive (Avison & Cairney, 2003), or (c) neurological mechanisms (Roepke, et al., 2008).

Behavioral influences on an individual's physical health reports have been reported to occur in the context of actively performing health promoting behaviors or adherence to any medical regimens (Pressman et al., 2005). Individuals with higher levels of mastery may have more time and energy to dedicate to maintaining good health practices (i.e. consuming a healthy diet, maintaining physical activity, seeing a doctor regularly) thereby decreasing the risk of experiencing physical illness. Positive feelings about oneself and their social relationships have been linked to better physical health outcomes serving as a cognitive pathway connecting mastery to physical health outcomes (Folkman 2013). Additionally, mastery has been shown to increase positive feelings of self and social relationships (Martire et al., 1998). This may occur due to the perception that if one feels good about themselves, they may be more apt to take care of their health, and if individuals perceive that they have support from close relationships they may be held more accountable to maintain health promoting behaviors (i.e. reminders from spouse to eat healthier, visit the doctor, etc.) (Cutrona 1996; Umberson 1987). Lastly, recent studies have suggested that positivity reaped from mastery may have a direct effect on health through enhanced immune functioning and neuroendocrine activity (Mausbach et al., 2007). When individuals have higher levels of mastery it may be presumed that individuals are managing stress appropriately. When individuals successfully cope with stress this should lead to a reduction in the activation of stress reactions such as, the hypothalamic-pituitary-adrenal axis or sympathetic nervous system axes, and lower activation of these stress responses over time are related to improved health (Ryff et al., 2004).

Effects of Contextual Stressors

The present study furthered examined the relationship between the initial level and rate of change of mastery on changes in physical illness by considering the moderating effects of contextual stressors including NLEs and WFC through the lens of COR (Hobfoll, 1989). It was expected that individuals who were categorized as having high NLEs or WFC, mastery's beneficial effect on later physical illness would no longer be present. This would occur due to individuals being unable to efficiently and effectively utilize mastery resources under times of high stress. But, it was anticipated that individuals who were facing low

levels of NLEs and WFC, the beneficial effect of mastery reducing later reported physical illness would remain.

When examining the moderating effects of contextual stressors, the results of this study supported our hypotheses by suggesting that only under conditions of low stressful context is mastery beneficial to later physical illness reports. Whereas, under conditions of high contextual stressors, the initial level and changes in mastery are no longer beneficial for later physical illness reports of mothers. Thus, it may be likely that individuals are unable to utilize resources effectively during times of high stress. It may be that the high levels of stress associated with high NLEs and WFC cause individuals to be less likely to engage in health promoting behaviors such as maintaining a healthy diet or exercise regime (Roepke et al., 2011). Furthermore, high levels of stress have been shown to invoke physiological, psychological, behavioral, and cognitive arousal that may neutralize the beneficial effects of mastery (M Ewen et al., 2010). Additionally, past research suggests that, as individuals' age, it may become more difficult to attain and maintain positive psychological resources (Helvik et al., 2016). Thus, for aging individuals it may be more challenging to successfully utilize resources especially under times of stress.

Results suggest that under conditions of lower stressful contexts, mastery was able to have a positive impact on later physical illness. Thus, without heavy demands or stressors, individuals can successfully use resources to maintain healthy habits. It is important for future research to discover how individuals can continue to practice the same healthy habits under stressful contexts, arguably when resources are needed most.

Research has indicated that mastery may be most useful when an individual feels more control over life circumstances (White et al., 2012). On the other hand, when situations are outside of an individual's control and the individual feels pressure from mounting stress, this may inhibit the use of mastery to overcome the challenges due to diminished motivation or an alteration of thought patterns (i.e. focusing only on negativities) (Bandura 1989; Infura et al., 2015). Additionally, psychological resources have important implications for older populations due to the impact these resources may have on health outcomes, and previous research has suggested that as individuals' age, availability of these resources decreases (Wolinsky et al., 1996). We build upon the Conservation of Resources theory (COR; Hobfoll, 1989) and the transactional model of stress (Lazarus & Folkman, 1984) to explore how stressful contexts can moderate the impact of the initial level and rate of change of women's early-middle years mastery on later-middle years physical illness. COR theory specifies most importantly that individuals are motivated to obtain, retain, foster, and protect resources, and that the loss of resources will be detrimental for the individual. In this study we have expanded on COR theory to suggest that individuals may conserve resources, even during times of need, to prevent the risk of total resource deprivation. Hobfoll (2001) contends that as individuals begin to lose resources, they will become more defensive of their remaining resources, thus safeguarding resources rather than investing them.

Limitations

There are several limitations to the current study that should be noted. Specifically, the generalizability of the sample is a limitation. The sample was comprised only of European-

American individuals that lived in rural Iowa. Studies testing similar models with a more diverse population are needed. Future samples should not only include greater racial/ethnic diversity, but also greater variation in length of marriage and geographic location. Additionally, all measures were captured by self-report. Self-reported physical illness only captures one aspect of the health consequences stressful contexts can have on women. Future research should consider a broader social consequence model that takes into account a more comprehensive array of symptoms (e.g. anxiety, hostility, anger), behavioral problems (antisocial behaviors, drug or alcohol use), and mental health concerns (depression, anxiety, self-esteem), as well as other physical illness outcomes (physical limitations, global health). Due to a gap between data collection, no data exists between the years of 1994 and 2001, it is acknowledged that this is a large space of time in which a lot of changes may occur within the individual, and their surrounding environment. Lastly, several of the measures had low reliabilities as measured by Cronbach's Alpha. This may be due to the dichotomized (yes/no) nature of some of the measures utilized or it may be a result of these measures not being the best fit with the sample. Future studies should maybe consider testing the hypothesized relationships with other existing measures.

Conclusion

Results from this study highlight several important issues within the discussion of aging mothers' mastery and its impact on later physical illness, while also considering the moderating effect of stressful contexts. Initially, results give support to past research that mastery may enhance positive health behaviors by decreasing the amount of health issues women experience in their later middle years. Additionally, results highlight that high amounts of stressful contexts may inhibit mastery's influence on physical illness. Within the tested moderation models, high levels of negative life events (NLEs) and work-family conflict (WFC), the initial level and rate of change of mastery had no effects on changes in physical illness. But, when examining low levels of these stressful contexts, mastery maintained a positive impact on physical illness. Future research should expand on this by considering ways in which mastery skills can be enhanced to provide protective factors on health or how possessing an accumulation of psychological resources (i.e. mastery, self-esteem, perceived control) can rise above high amounts of stressful contexts and sustain positive health effects. Additionally, clinicians and health care providers should be cognizant that older adults may face challenges in attaining and maintaining valuable psychological resource, and may therefore be more susceptible to the negative consequences of stressful contexts on health.

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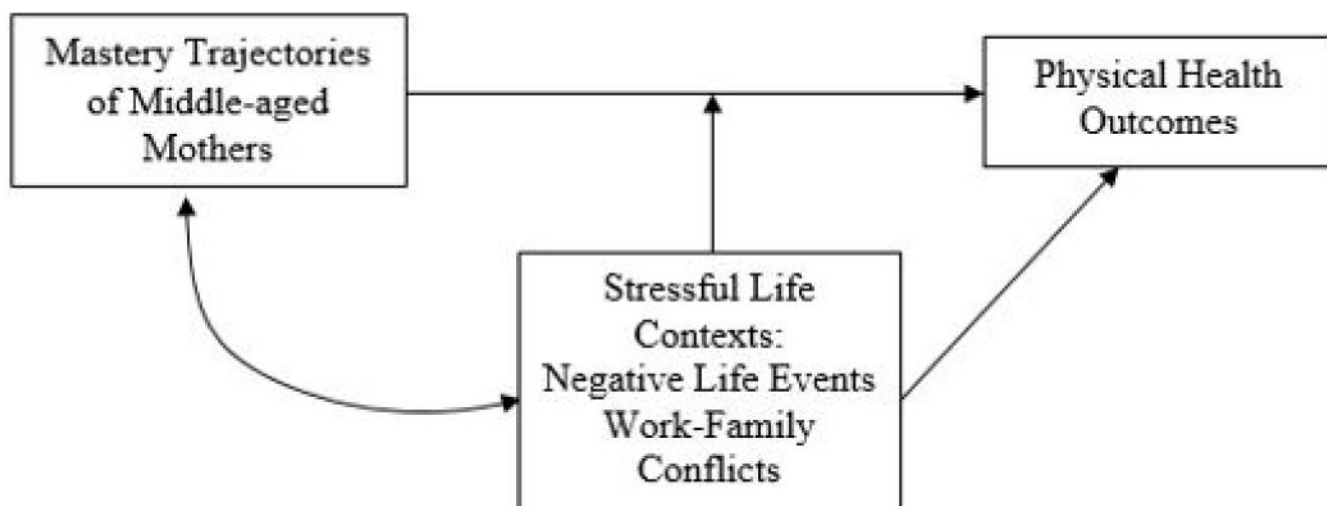


Figure 1.
Conceptual Model

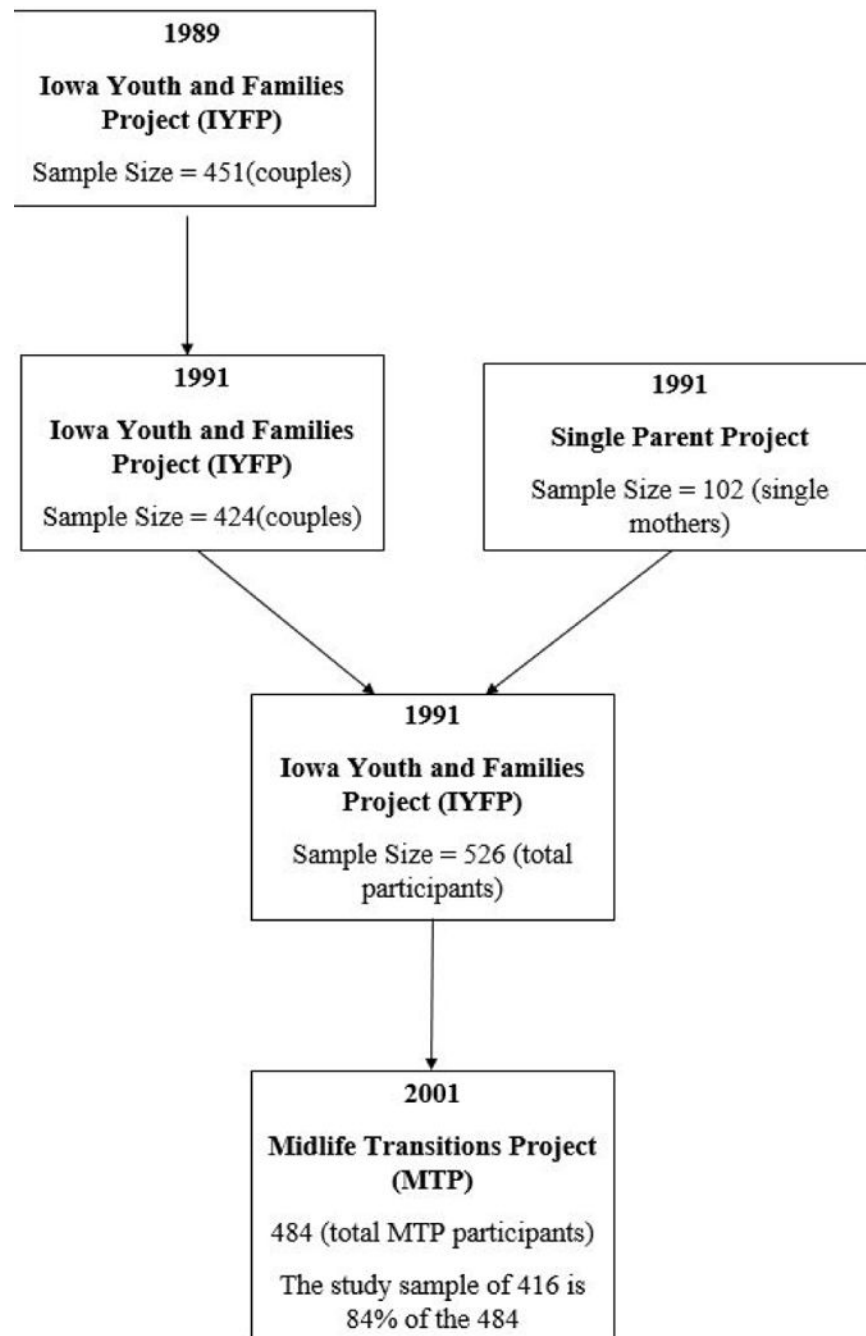
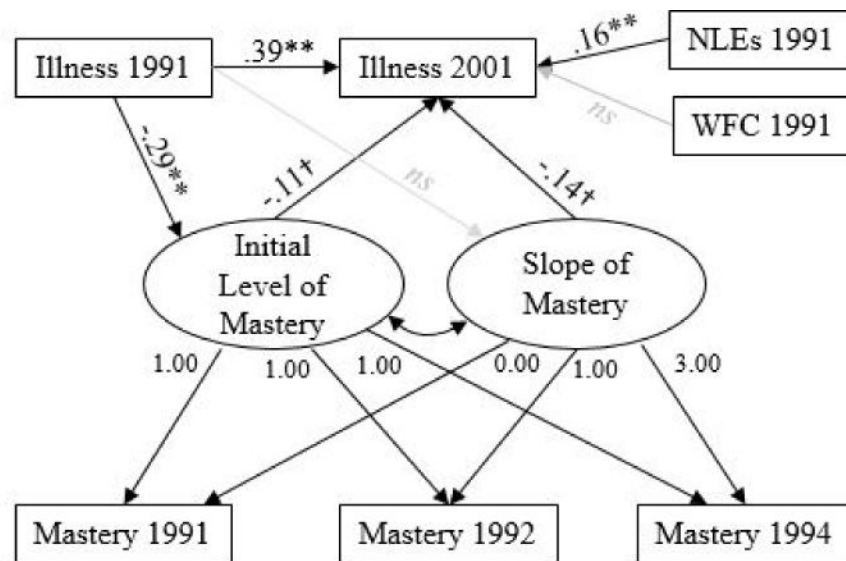


Figure 2.
Flow Chart of Data Collection



$\chi^2 (df): 48.22(7) p < .001$

CFI: .92

RMSEA: .09

$\dagger p < .10$ $**p < .001$

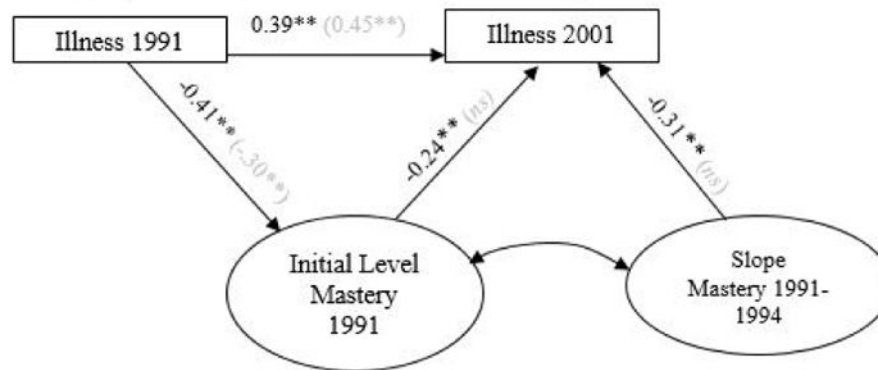
Note: NLEs and WFC were correlated with the initial level and slope of mastery, these correlations were significantly correlated with the level and slope ($p < .05$).

All reported coefficients are unstandardized.

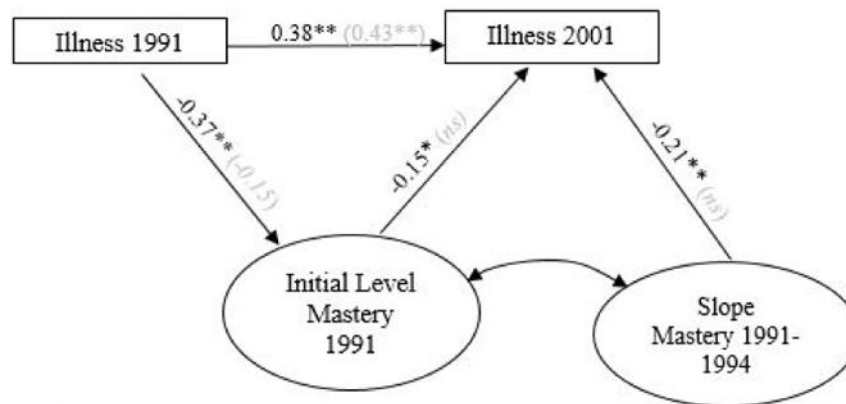
Figure 3.

The Influence of Mastery Trajectories and Life Stressors on Health of Middle-Aged Mothers (CFI = 0.92, RMSEA = 0.09).

4a. Moderation of NLEs (Unstandardized coefficients for high group in the parentheses, low group outside {CFI = 0.99, RMSEA = 0.06})



4b. Moderation of WFC (Unstandardized coefficients for high group in the parentheses, low group outside {CFI = 0.94, RMSEA = 0.05})



Model 3a:

$\chi^2 (df) = 5.55(2) p = .06$, CFI = .99, RMSEA = .06

Model 3b:

$\chi^2 (df) = 1.80(2) p = .03$, CFI = .94, RMSEA = .05

* $p < .05$ ** $p < .001$

Note. The direct path between illness in 1991 and the slope is not shown, and were not significant for either model.

Figure 4.

Moderating Effect of Contextual Stressors on the Relationship between Mastery and Illnesses

Table 1

Correlations, Means, and Standard Deviations amongst Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Mastery 1991	—										
2. Mastery 1992	.62**	—									
3. Mastery 1994	.58**	.56**	—								
4. Illness index 1991	-.31**	-.22**	-.24**	—							
5. Illness index 2001	-.23**	-.22**	-.24**	.46**	—						
6. NLEs 1991	-.30**	-.21**	-.20**	.25**	.34**	—					
7. NLEs 1992	-.23**	-.30**	-.22**	.35**	.29**	.58***	—				
8. NLEs 1994	-.24**	-.21**	-.25**	.20**	.33**	.40***	.44**	—			
9. WFC 1991	-.09	-.07	-.21*	.24**	.11*	.12*	.08	.07	—		
10. WFC 1992	-.05	-.14*	-.11*	.10	.07	.09*	.11*	.10*	.22**	—	
11. WFC 1994	-.11*	-.15*	-.16***	.15*	.06	.12*	.04	.15**	.45**	.56***	—
Mean	3.50	3.73	3.66	3.73	3.12	3.08	2.85	2.43	2.42	2.54	2.58
SD	.55	.44	.44	2.49	2.61	2.66	2.63	2.30	.64	.69	.66

*
 $p < .01$,***
 $p < .001$