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Seungyoun Kim & Bob G. Knight

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The Effects of the MORE Wisdom Resources on Spousal Caregivers' Life Satisfaction: An Application of the Resilience Model

Seungyoun Kim, PhD ^a and Bob G. Knight, PhD^b

^aUniversity of California Los Angeles, Los Angeles, California, USA; ^bUniversity of Southern Queensland, Toowoomba, Australia

ABSTRACT

Objectives: Models of resilience suggest that psychosocial resources and their interactions facilitate resilience while experiencing life challenges of caregiving. The MORE wisdom resources (sense of Mastery, Openness to experience, Reflective attitude, and Emotion regulation) have been suggested as possible personal resources of resilience that predict positive health outcomes of caregivers. Applying a model of resilience, this study examined the direct and indirect effects of the three of the MORE wisdom resources (sense of Mastery, Openness to experience, and Emotion regulation) on caregiving spouses' life satisfaction and perceived physical health.

Methods: Using data from the survey of Midlife in the United States, caregiving spouses ($n = 114$) and matched non-caregivers ($n = 114$) were included. We compared the direct and indirect effects of the wisdom resources on life satisfaction and physical health between the two groups.

Results: The simple mediation model proposed in 2008 by Preacher and Hayes revealed that openness to experience was directly associated with better life satisfaction among caregiving spouses. Sense of mastery and emotion regulation had indirect effects on life satisfaction through spousal support. The effects the wisdom resources on caregiving spouses' perceived physical health were not found.

Conclusions: This study demonstrated that the three of the MORE wisdom resources are possible personal resilience factors influencing life satisfaction among caregiving spouses. Moreover, the study showed how spousal support mediates the relationship between the wisdom resources and life satisfaction.

Clinical Implications: Interventions aiming to increase life satisfaction among caregiving spouses should focus on increasing both personal and environmental resources and strengthening the relationship of the caregiver and care recipient.

KEYWORDS

Caregiving spouses; life satisfaction; MORE wisdom resources; resilience; social support

Introduction

The negative consequences of caregiving are evident and have dominated family caregiving research (Yap et al., 2010). In recent years, however, a growing number of researchers have become interested in finding positive psychological and physical health outcomes among family caregivers (e.g., Mausbach et al., 2011; Tarlow et al., 2004).

This research trend has been accelerated by an increasing emphasis on resilience studies exploring positive health outcomes in reaction to acute and chronic stress situations. Resilience refers to a positive adaptive process, that is, the maintenance or regaining of well-being under conditions of stress (Rutten et al., 2013; Ryff, 2012). Therefore, resilience is considered the outcome of the successful adaptation to severe life challenges. A key question of resilience researchers is

how some individuals, when faced with an adversity, maintain their well-being (Ryff, 2012), and they suggest that resilience involves the interaction between adverse life events and internal and external individual resources (Dias et al., 2015). In caregiving research, models of resilience suggest that various psychosocial resources (resilience factors) and their interactions facilitate resilience while experiencing life challenges of caregiving (e.g., Shirai, Silverberg Koerner, & Baete Kenyon, 2009). Positive health outcomes during caregiving experiences highlight the importance of exploring psychosocial resilience resources that may protect caregivers from mental and physical health risks.

Despite increasing attention to the positive relationship between psychosocial resources and caregivers' health, two gaps in the literature deserve

attention in understanding the mechanisms by which those resources may lead to positive health outcomes. First, previous studies did not consider a range of psychosocial factors. Some wisdom researchers suggest that the MORE wisdom resources help people respond to life challenges, such as caregiving, in a growth-conducive way, and result in positive outcomes (Ardelt, 2005; Glück & Bluck, 2014). The MORE is an acronym for sense of Mastery, Openness to experience, a Reflective attitude, and Emotion regulation. Given that the MORE resources are psychosocial factors that may predict positive health outcomes of caregivers, understanding the association between the resources and caregivers' health is important. Second, little is known about how other psychosocial resilience factors mediate the relationship between the MORE wisdom resources health outcomes among caregivers. Exploring mediation effects of other psychosocial resilience factors will contribute to better understanding of the relationships between the MORE resources and caregivers' health.

By applying the model of resilience as a theoretical framework, the present study examined the possible direct and indirect effects of the three variables (sense of Mastery, Openness to experience, and Emotion regulation) among the MORE resources on caregivers' life satisfaction and perceived physical health. In this study, life satisfaction and perceived physical health represent psychological and physical well-being among caregivers. Considering the heterogeneity of nature, needs, and health outcomes among caregiving subgroups (Pinquart & Sörensen, 2011), this study focused on a specific subgroup of caregivers: caregiving spouses. Based on the results of the current study, we suggested effective interventions to improve spousal caregivers' life satisfaction.

Theoretical Background: The Interactive Model of Resilience

There are multiple resources and pathways to resilience, and those factors and systems often interact to increase resilience (Herrman et al., 2011). Davydov, Stewart, Ritchie, and Chaudieu (2010) proposed that resilience arises from complex interactions between personal and environmental resources. Herrman and colleagues (2011) also suggested an interactive model of resilience illustrating relationships among

the factors facilitate resilience after life challenges. They identified personal factors (e.g., personality traits, self-efficacy, active coping, and demographic factors) and environmental factors (e.g., the relationship with family and peers, social support, and community services) as sources of resilience and suggested that both direct and indirect effects of sources enhance resilience. Based on the resilience model, caregiving researchers demonstrated that the direct and indirect effects of personal resources and social support as an environmental resource facilitated resilience after experiencing caregiving (Nijboer, Tempelaar, Triemstra, van den Bos, & Sanderman, 2001; Shirai et al., 2009). These studies suggest that personal resources directly contribute to caregivers' mental and physical health, and personal factors also indirectly enhance caregivers' health through support from the social network.

Direct and Indirect Effects of the MORE Wisdom Resources

The MORE Life Experience Model

Social scientists have paid increasing attention to the concept of wisdom over the past four decades. There is still no consensus definition of wisdom, however, most wisdom researchers agreed on multi-dimensional characteristics of wisdom including cognitive, affective, and reflective components (Ardelt & Oh, 2010; Glück & Bluck, 2011; Knight & Laidlaw, 2009). Some previous wisdom studies have focused on the development of wisdom (see Staudinger & Glück, 2011 for review). Glück and Bluck (2014) suggested the MORE life experience model and investigated four interrelated psychological resources that may facilitate development of wisdom through negative life experiences: sense of Mastery, Openness to experience, a Reflective attitude, and Emotion regulation skills (MORE)¹. The model postulates that four resources are the precursor to the development of wisdom because they influence on what life challenges individuals encounter, how they deal with those challenges, and what they learn from them, which provide more chances for individuals to develop wisdom (Glück & Bluck, 2014). In other words, four personal factors (sense of mastery, openness to experience, reflective attitude, and emotion regulation) can be thought as the MORE wisdom resources because they are interact with negative life

experiences to generate positive outcomes. Based on the MORE life experience model, it is reasonable to expect that the MORE wisdom resources can be related to positive outcomes of caregivers who are dealing with one of the challenging life events. This is also in line with the model of resilience suggesting that some personal factors are able to enhance resilience in the face of life challenges (see Figure 1).

Sense of mastery is knowing that in general one will be able to control and cope with things that happen. Lawton, Kleban, Moss, Rovine, and Glicksman (1989) described caregiving specific mastery as “the positive view of one’s ability and ongoing behavior during the caregiving process” (p. 62). Active mastery is a key predictor of positive growth from stressful traumatic experiences (Maercker & Zoellner, 2004). Openness to experience is defined as the tendency to be interested in learning from new perspectives and experiences (Zoellner, Rabe, Karl, & Maercker, 2008). Maercker and Zoellner (2004) argue that people who are more open to new experiences are able to deal better with negative life experiences because they are less afraid of changes and new situations. A reflective attitude refers to the ability and willingness to see things from multiple perspectives (Ardelt, 2005). Emotion regulation is control of one’s own emotions and perception and management of others’ emotional reactions. Emotion regulation comprises reappraisal and suppression (Gross, 2001). Reappraisal is the process by which people change how they think about the situation, and suppression means that an individual inhibits ongoing emotion expressive behavior (Gross, 1998b). Emotion regulation as a component of the MORE resources is closer to reappraisal than suppression. Emotion regulation has been proposed as central to the successful management of highly difficult life situations (Glück,

2011), because people with high emotion regulation skills are more likely to recognize and modulate their feelings (Kliewer et al., 2004). Given spousal caregiving is a chronically stressful experience and is considered as a life crisis, it is expected that the MORE wisdom resources would be positively associated with better health outcomes among spousal caregivers and facilitate their resilience.

Empirical Background

Among the MORE wisdom resources, the direct effect of sense of mastery on caregivers’ health has been found throughout the literature. Sense of mastery has proven to be a personal resource affecting spousal caregivers’ mental and physical health. Adams, Smyth, and McClendon (2005) found that higher levels of personal mastery buffered the relations between stress and depression among caregiving spouses. The impact of sense of mastery on spousal caregivers’ mental health was found in a longitudinal study as well (Mausbach et al., 2007). Furthermore, a sense of mastery has proven to be a personal resource affecting caregivers’ physical health with the use of subjective and objective measures of health (Mausbach et al., 2008; Myaskovsky et al., 2012; Roepke et al., 2008, 2009). The positive relationships between openness to experience and mental health among caregivers have been found. Although, Tew, Naismith, Pereira, and Lewis (2013) found that openness to experience was associated with a better quality of life among caregivers of Parkinson’s Disease (PD), this study did not differentiate among caregiving subgroups. Moreover, to our knowledge, there has been no research to date exploring the relationship between openness to experience and physical health among spousal caregivers. In a study exploring links between coping

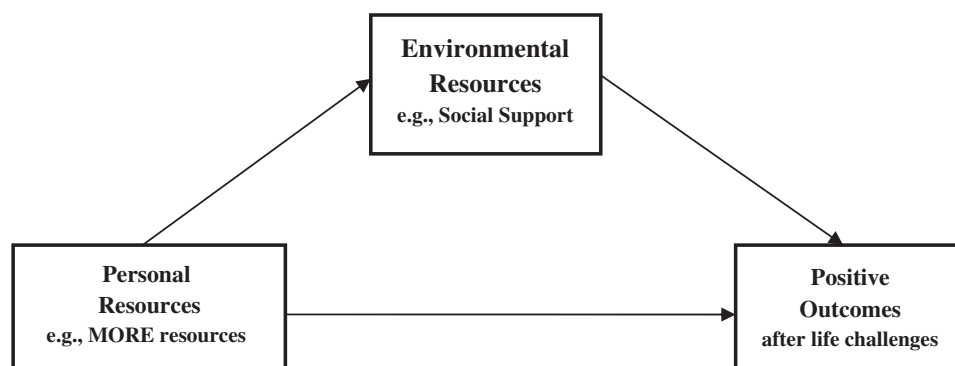


Figure 1. The connection between the resilience model and the MORE wisdom resources (The MORE wisdom resources as possible personal resources in the resilience model).

and positive psychological states in caregiving experiences, emotion regulation was associated with positive psychological states during caregiving (Folkman & Moskowitz, 2000). Monin, Schulz, Lemay, and Cook (2012) also found that using more positive emotion words, which were linguistic markers of emotion regulation, was associated with lower cardiovascular reactivity among older spousal caregivers.

In addition to direct effects of personal factors on caregivers' health, there is a growing interest in indirect effects of these resources on health among caregivers (Herrman et al., 2011). Although this new line of research suggests interactive protective effects of psychosocial resilience resources on caregivers' health, no studies, to our knowledge, have examined indirect effects of the MORE wisdom resources on spousal caregivers' health through social support.

Present Study

Based on the interactive resilience model, the first aim of this study was to examine the direct effect of the MORE wisdom resources on life satisfaction, and the indirect effect of the resources on life satisfaction through social support among caregiving spouses. Given that resilience is maintaining well-being in response to adversity (Ryff, 2012), life satisfaction, one of the measurements of psychological well-being can be used as an outcome of resilience. Prior research has confirmed the positive relationships between resilience and life satisfaction (Fredrickson, Tugade, Waugh, & Larkin, 2003; King, 2000). The high correlations between the two constructs might be due to the positive association between life satisfaction and many psychosocial resources and protective factors for resilience, such as optimism (Akbar et al., 2014). Therefore, it is reasonable to assume that resilient individuals who possess those psychosocial resources and factors are more likely to be satisfied with their overall life.

Including life satisfaction as an outcome of resilience also has clinical importance in that life satisfaction has beneficial health effects for individuals (Siahpush, Spittal, & Singh, 2008). A number of studies have found positive associations between life satisfaction and mental health (e.g., Seow et al., 2016). In addition, life satisfaction has been shown to have protective effects of on all-cause disease and

mortality (e.g., Collins, Gleib, & Goldman, 2009). Life satisfaction may be directly associated with healthy biological responses (see Pressman & Cohen, 2005), or indirectly related to health outcomes by improving healthy behaviors, such as exercise (e.g., Grant, Wardle, & Steptoe, 2009).

Based on empirical evidence suggesting positive effects of the MORE wisdom resources on caregivers' physical health (e.g., Mausbach et al., 2008; Myaskovsky et al., 2012), the second aim of this study was to explore the direct and indirect effect of the MORE wisdom resources on caregivers' self-rated physical health.

In this study, sense of Mastery, Openness to experience, and Emotion regulation among the MORE resources (hereinafter referred to as "the wisdom resources") were considered as potential personal resilience resources related to life satisfaction and physical health among spousal caregivers. Reflective attitude was not included in this study because we could not find a measure in our dataset that could assess the concept. To explore the role of caregiving experiences on the effects the wisdom resources on caregivers' life satisfaction and physical health, we compared caregiving spouses and matched non-caregivers. First, we predicted that the wisdom resources will have direct effects on life satisfaction. Specifically, higher scores on the resources will be associated with higher levels of life satisfaction (*Hypothesis 1a*). We also predicted indirect effects of the wisdom resources on caregivers' life satisfaction through social support. The positive association between the wisdom resources and life satisfaction will be partially mediated by social support (*Hypothesis 1b*). Next, we predicted that higher scores on the resources will be related to higher levels of self-rated health index² (*Hypothesis 2a*). We predicted that the positive association between the wisdom resources and spousal caregivers' self-rated health will be partially mediated by social support (*Hypothesis 2b*).

Methods

Data and the Analytic Sample

We analyzed data from the study of Midlife in the United States (MIDUS), a longitudinal study of health and aging in the United States

conducted by the MacArthur Foundation Research Network on Successful Midlife Development. The MIDUS study was initially conducted in 1995–1996 (MIDUS I). The original sample ($n = 7,108$) was a national probability sample of non-institutionalized, English speaking midlife adults (mean age = 55.4) residing in the 48 contiguous states. Between 2004 and 2006, participants ($n = 4,963$, main sample) were asked to participate in a telephone interview and subsequent postal survey (MIDUS II) similar in content to MIDUS I. In MIDUS II, additional questions were added in selected areas (e.g., caregiving experience, cognitive functioning, optimism and coping, and stressful life events). Even though the dataset is longitudinal, we only included the analytic sample from the second wave of MIDUS due to limitations in measuring caregiving status at the first wave of MIDUS. In this study, the analytic sample includes a total of 4,963 (main sample) who provided information on caregiving experiences at MIDUS II. More detailed information regarding the data set can be found on the MIDUS website (<http://midmac.med.harvard.edu/research.html>).

Caregiving Status

In the phone questionnaire, the participants were asked if during the last 12 months they have given personal care for a period of one month or more to a family member or friend because of a physical or mental condition, illness, or disability at MIDUS II. Respondents who answered “yes” were asked to indicate to whom they gave the most personal care (types of relationship: husband, wife, son, daughter, father, mother, brother, sister, grandfather, grandmother, father-in-law, mother-in-law, and other [specify]). They also provided the year they had started caregiving. Among the 629 caregivers, 18% of them were caregiving spouses ($n = 114$). Participants who answered “no” on the first question were categorized as non-caregivers ($n = 4330$). Descriptive characteristics and distribution for all analytic variables for caregiving spouses are presented in Table 1.

Matched Non-Caregivers

Caregiving spouses ($n = 114$) were individually matched with one of 4,330 non-caregivers by

Table 1. Descriptive characteristics and distribution for all analytic variables.

Variables	Caregiving spouses ($n = 114$)		Matched non-caregivers ($n = 114$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Demographics				
Age (years)	62.96	11.63	62.29	9.93
Female (%)	65.80		65.80	
Education (%) (High School or greater)	94.70		93.90	
Ethnicity (Whites, %)	91.20		92.10	
The MORE wisdom resources				
Sense of mastery	5.36	1.02	5.74	1.02
Openness to experience	2.85	0.51	2.88	0.53
Emotion regulation	12.95	2.22	12.07	2.44
Social support				
Family support	3.31	0.45	3.50	0.71
Friend support	3.21	0.37	3.35	0.66
Spouse support	3.08	0.62	3.61	0.64
Outcomes				
Life satisfaction	7.74	1.21	7.77	1.25
Self-rated health	3.52	1.08	3.40	1.02

using a propensity score matching procedure based on age and gender. We did not consider education and ethnicity because the majority of participants in the MIDUS II sample were well-educated Whites. Table 1 presents descriptive characteristics and distribution for all analytic variables for the matched non-caregivers. Descriptive chi-square (χ^2) tests were used to compare spousal caregivers and non-caregivers on gender, and Student's *t*-test was used to compare age between two groups. There were no significant differences in age and gender between spousal caregivers and the matched non-caregivers. Missing data was limited: one participant in spousal caregiving group had missing data for education. There was no missing value on other variables across two groups.

Measures

The MORE Wisdom Resources

Sense of Mastery. Sense of mastery was measured by a 4-item personal mastery scale. This scale measures one's sense of efficacy or effectiveness in carrying out goals (Lachman & Weaver, 1998a). Participants in the survey were asked in the self-administered questionnaire to indicate the extent of agreement or disagreement with the four statements (e.g., “I can do just about anything I really set my

mind to”). Response categories were rated on a 7-point Likert-type scale (1 = *strongly agree*; 2 = *somewhat agree*; 3 = *slightly agree*; 4 = *neither agree or disagree*; 5 = *slightly disagree*; 6 = *somewhat disagree*; 7 = *strongly disagree*). Items were reverse-coded so that high scores reflected higher standing in sense of mastery. Cronbach’s α for this scale was .70.

Openness to Experience. Openness to experience was measured using the survey questionnaire in which the Big Five personality traits were assessed. Respondents were asked how much each of following adjectives described them: Creative, Imaginative, Intelligent, Curious, Broad-minded, Sophisticated, and Adventurous. Items were rated on a 4-point Likert-type scale (1 = *a lot*; 2 = *some*; 3 = *a little*; 4 = *not at all*). Items were reverse-coded so that high scores reflected higher openness to experience. Cronbach’s α for this scale was .77.

Emotion Regulation. Emotion regulation was measured by a 4-item positive reinterpretation and growth scale, which is a subscale of a problem-focused coping index (Carver, Scheier, & Weintraub, 1989). For example, respondents were asked “I look for something good in what is happening.” Items were rated on a 4-point Likert-type scale (1 = *a lot*; 2 = *a medium amount*; 3 = *only a little*; 4 = *not at all*). All items were reverse-coded so that high scores reflected higher standing in the scale. Cronbach’s α for this scale was .78.

Social Support

Social support in this study was operationalized as perceived emotional support from the social network consisting of spouses, family members (except spouse/partner), and friends.

Spouse/Partner Support. Spouse/partner support was measured using a 6-item self-administered questionnaire (Schuster, Kessler, & Aseltine, 1990). The spouse/partner support index indicated the extent of perceived availability of emotional support from spouse/partner. Participants were asked: “How much does your spouse or partner really care about you?”; “How much does he or she understand the way you feel about things?”; “How much does he or she appreciate you?”; “How much do you rely on him or her for help if you have a serious problem?”;

“How much can you open up to him or her if you need to talk about your worries?”; and “How much can you relax and be yourself around him or her?” Items were rated on 4-point scales (1 = *a lot*, 2 = *some*, 3 = *a little*, 4 = *not at all*). The scale was constructed by calculating the mean of the values of the items in the scale. The scale was computed for cases that have valid values for at least one item on the scale. Scores were not calculated for cases with any valid items on the scale. Items were reverse-coded so that high scores reflect higher stand on the scale. Cronbach’s alpha for this scale was .90.

Family Support. Family support was measured using a 4-item self-administered questionnaire (Schuster et al., 1990). The family support index indicated the extent of perceived availability of emotional support from family (except spouse/partner). Participants were asked: “Not including your spouse or partner, how much do members of your family really care about you?”; “How much do they understand the way you feel about things?”; “How much can you rely on them for help if you have a serious problem?”; and “How much can you open up to them if you need to talk about your worries?” Rating and scoring process was same with the spouse support scale. Cronbach’s alpha for this scale was .84.

Friend Support. Friend support was also measured using a 4-item self-administered questionnaire (Schuster et al., 1990). The friend support index indicated the extent of perceived availability of emotional support from friends. Participants were asked: “How much do your friends really care about you?”; “How much do they understand the way you feel about things?”; “How much can you rely on them for help if you have a serious problem?”; and “How much can you open up to them if you need to talk about your worries?” Rating and scoring process was same with the spouse support scale. Cronbach’s alpha for this scale was .88.

Life Satisfaction and Physical Health

Life Satisfaction. Life satisfaction refers to overall assessments of one’s quality of life (Diener, 1984). Satisfaction with life was measured by a 5-item self-administered questionnaire. Respondents

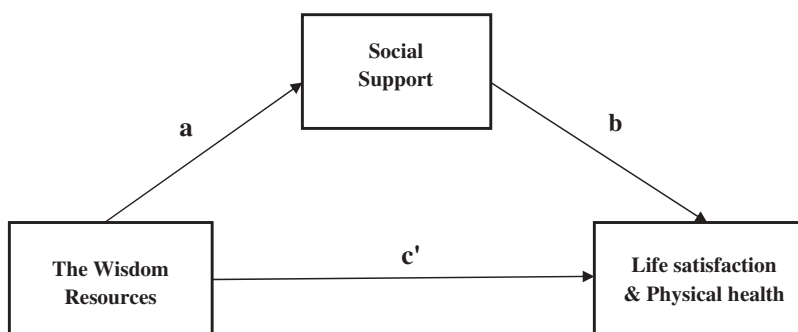


Figure 2. Illustration of direct and indirect effects of the wisdom resources on health outcomes. c = total effect; c' = direct effect; ab = indirect effect

were asked to rate their life overall, work, relationship with family (relationship with spouse/partner and relationship with children, respectively), and health (Prenda & Lachman, 2001). The scores for relationship with spouse/partner and relationship with children were averaged to create one “item” reflecting satisfaction with the family relationship. Then, this score was used along with the remaining three items (satisfaction on their life overall, work, and health) to calculate an overall mean score. High scores reflect higher levels of life satisfaction. Cronbach’s α for this scale was .65.

Self-Rated Global Health. Global self-rated physical health was measured using a single question evaluating respondents’ physical health. Participants were asked: “In general, would you say your physical health is excellent, very good, good, fair, or poor?” (1 = *excellent*, 2 = *very good*, 3 = *good*, 4 = *fair*, 5 = *poor*). Items were reverse-coded so that higher scores reflect better physical health status.

Data Analytic Plan

To test the possible direct and indirect effects of the wisdom resources on spousal caregivers’ life satisfaction and physical health, total, direct, and indirect effects were calculated. The simple mediation approach and SPSS macro provided by Preacher and Hayes (2004, PROCESS) were used for this analysis. The procedure consists of (1) estimating the effect of the wisdom resources on the social support (a); (2) estimating the effects of social support on life satisfaction and physical health, while

controlling for the effect of the wisdom resources (b); (3) calculating the indirect effect of the effect of the wisdom resources on life satisfaction and physical health through the social support (ab); (4) bootstrapping the sampling distribution of “ab” and deriving a confidence interval (CI) with the empirically derived bootstrapped sampling distribution. The total effect was defined as the sum of the indirect effect (ab) and direct effect (c') in a given model (see Figure 2). Using the bootstrap sample, the indirect effect (ab) or the product of the two regression coefficients between the wisdom resources and caregivers’ life satisfaction and physical health through social support was calculated. If the 95% bias-corrected confidence interval for the parameter estimate did not contain zero, then the indirect effect was statistically significant, and indirect effect was demonstrated (Mallinckrodt, Abraham, Wei, & Russel, 2006; Preacher & Hayes, 2008). More detailed information about bootstrapping can be found elsewhere (Preacher & Hayes, 2004, 2008).

Based on findings from the literature that social influences on health outcomes vary by types of social relationship (Brooks et al., 2014; Robles & Kiecolt-Glaser, 2003), this study differentiated social support by relationships; family support, friend support, and spouse support. We conducted three separate analyses to find direct and indirect effects of the three of the wisdom resources on caregivers’ life satisfaction³. Each type of social support was individually included in each analysis as a possible mediator. Therefore, the total number of analyses was 9 (wisdom resources [3] x social support [3]) for life satisfaction. The same number of analyses was conducted for a physical health outcome.

Results

Bivariate Correlations for the Key Variables among Caregiving Spouses

Table 2 shows bivariate correlations for the key variables among caregiving spouses. Life satisfaction had significant positive correlations with wisdom resources and social support, except friend support. Spouse support was relatively highly related to life satisfaction ($r = .40$). Correlations between psychosocial resilience resources (the wisdom resources & social support) and self-rated physical health were not significant.

The Effects of the Wisdom Resources on Life Satisfaction among Spousal Caregivers

Direct Effects

Although we found direct effects of sense of mastery on life satisfaction, those effects were also

observed in the matched non-caregivers. The bootstrap analysis revealed a direct effect of openness to experience on life satisfaction among caregiving spouses: $B = .50$, $SE = .22$, $CI (.06, .93)$. The direct effect of emotion regulation on life satisfaction was not found in this study (see Table 3).

Indirect Effects

Table 3 presents the results of the indirect effects of the wisdom resources on life satisfaction through three types of social support among caregiving spouses. Sense of mastery indirectly affected life satisfaction through spouse support: $B = .08$, $SE = .03$, $95\% CI (.03, .15)$. While openness to experience did not indirectly affect life satisfaction through social support, emotion regulation had an indirect effect on life satisfaction through spouse support: $B = .04$, $SE = .02$, $95\% CI (.01, .08)$. That is, the effects of sense of mastery and emotion

Table 2. Correlation coefficients among key variables for caregiving spouses.

	Mastery	Openness to experience	Emotion regulation	Family support	Friend support	Spouse support	LS	SPH
Sense of mastery	—							
Openness to experience	.40**	—						
Emotion regulation	.23*	.45**	—					
Family support	.02	-.001	.19*	—				
Friend support	.30* *	.37**	.27**	.30 **	—			
Spouse support	.23*	.10	.16	.12	.06	—		
Life satisfaction	.26**	.20*	.20 *	.19*	.13	.40 **	—	
Physical health	.06	.09	.001	-.05	-.08	-.02	.53**	—

Notes: LS = life satisfaction; SPH = self-rated physical health.

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

Table 3. The direct and indirect effects of the MORE wisdom resources on life satisfaction among caregiving spouses.

	Direct effect: Sense of mastery on LS			Indirect effect: Sense of mastery on LS		
	B	SE	95 % CI	B	SE	95 % CI
Family support	.25*	.08	.09– .42	.001	.01	-.02– .04
Friend support	.24*	.09	.07– .41	.02	.03	-.02– .08
Spouse support	.18*	.08	.02– .34	.08^a	.03	.03– .15
	Direct effect: Openness to experience on LS			Indirect effect: Openness to experience on LS		
	B	SE	95 % CI	B	SE	95 % CI
Family support	.50*	.22	.06– .93	.01	.04	-.07– .11
Friend support	.42	.25	-.07– .91	.08	.11	-.12– .31
Spouse support	.39	.21	-.03– .80	.11	.08	-.03– .29
	Direct effect: Emotion regulation on LS			Indirect effect: Emotion regulation on LS		
	B	SE	95 % CI	B	SE	95 % CI
Family support	.11	.05	-.001– .21	.01	.01	-.001– .04
Friend support	.10	.05	-.01– .21	.02	.02	-.01– .06
Spouse support	.08	.05	-.02– .18	.04^a	.02	.01– .08

Notes. LS= Life Satisfaction; B= unstandardized coefficient; SE= standard error; CI= confidence interval.

The significant effects not observed in the matched non-caregivers are in boldface.

Analyses control for age, sex, education, and ethnicity.

^a Significant at least at $p < .05$; Statistical software did not distinguish p -values $< .05$ for indirect effects.

* $p < .05$.

regulation on life satisfaction were partially explained by spouse support.

The Effects of the Wisdom Resources on Spousal Caregivers' Self-Rated Health

We could not find any significant direct and indirect effects of the wisdom resources on self-rated health among caregiving spouses.

Discussion

The current study examined the effects of the three of the MORE wisdom resources (sense of Mastery, Openness to experience, and Emotion regulation) on spousal caregivers' life satisfaction and physical health. Based on the resilience model, this study contributed to the understanding of the relationship between psychosocial resilience resources and spousal caregivers' life satisfaction and perceived physical health not only by examining the direct effects of the wisdom resources but also their indirect effects. By comparing caregivers with non-caregivers, we could identify whether caregiving experience makes a difference in the association between psychosocial resilience factors and life satisfaction and physical health.

The hypothesized direct and indirect effects of the wisdom resources on life satisfaction (Hypothesis 1a & 1b) were partially supported by our results. The current study revealed that openness to experience was directly related to life satisfaction among caregiving spouses compared to the matched non-caregivers. Sense of mastery and emotion regulation showed indirect effects on life satisfaction through spouse support. Hypotheses 2a and 2b was not supported by the results of the study. We could not find the link between the wisdom resources and self-rated physical health among spousal caregivers.

The Effects of the Wisdom Resources on Life Satisfaction among Spousal Caregivers

The current findings suggest that openness to experience is a beneficial source of spousal caregivers' life satisfaction. This finding is in line with Tew and colleagues' (2013) findings that openness to experience was associated with a better quality of

life among caregivers of Parkinson's Disease (PD). The sample of their study consisted of diverse caregiving subgroups; however, the great majority of the sample was caregiving spouses (83%). They suggested that caregivers with high openness to experience had a greater quality of life because they are amenable to new experiences and they adapt to potential stressors. Turiano, Spiro, and Mroczek (2012) suggested that openness to experience may act as a buffer to stressors because people with high levels of openness to experience are more willing to try new approaches to manage their stress. Therefore, openness to experience may benefit caregiving spouses' life satisfaction by handling stress from caregiving.

Furthermore, this study provides evidence that spouse support is a crucial mediator of the relationship between personal resilience factors (the wisdom resources) and life satisfaction among caregiving spouses. A growing body of research has identified that a positive relationship between caregivers and care recipients may lead to positive caregiving experiences for caregivers (Hellström, Nolan, & Lundh, 2005; Shim, Barroso, & Davis, 2012). Fergus, Gray, Fitch, Labrecque, and Phillips (2002) also emphasized the importance of reciprocal support and psychological adjustment between caregiving spouses and care recipients. They found that emotional support for caregivers was predominant in the nature of care recipient-provided support. The mere recognition of physical and mental burden associated with caregiving on spouses by care recipients was considered support to caregivers. Litwin, Stoeckel, and Roll (2014) found that the closeness of the relationship between the caregiver and the care recipient can lessen caregiver depression. It is interesting to note that support from spouse is the only significant mediator among three types of social support. One possible reason for this finding is that support from spouses may be the most available resource for caregiving spouses. Caregiving spouses often restrict their time with family and friends due to their caregiving duties (Brodaty & Donkin, 2009). Therefore, they may have less contacts and interactions with other families and friends.

Emotion regulation benefited caregiving spouses' life satisfaction only through social support. We could not find the direct effects of emotion regulation on life

satisfaction among caregiving spouses. Much literature has demonstrated the positive effects of emotion regulation (positive reappraisal) on psychological and physical health outcomes. It has also been suggested that successful emotion regulation is important to caregivers' health outcomes (Kliewer et al., 2004; Monin et al., 2012). However, studies also indicated that individual differences exist in ways of regulating emotions, and some are healthier and more effective than others (Singh & Mishra, 2011). McRae, Ciesielski, and Gross (2012) found that the effect of emotion regulation differs depending on its goals and tactics. Gross (1998b) mentioned that reappraisal is effective only as long as it is flexible and realistic. Therefore, the findings of the current study with regard to the effects of emotion regulation on spousal caregivers' life satisfaction suggest that the effects of emotion regulation on life satisfaction are more successful when emotion regulation interacts with other factors such as social support. In our study, emotion regulation was effective for caregiving spouses in that emotion regulation improved the quality of the spousal relationship, which in turn enhanced life satisfaction. Future research is needed to identify diverse potential pathways between emotion regulation and caregivers' life satisfaction.

Our study design compares caregivers and non-caregivers, suggesting significant roles for openness to experience, emotion regulation, and spousal support as correlates of spousal caregivers' life satisfaction. One possible explanation for differences in the effects of those resilience resources on life satisfaction between caregivers and non-caregivers is that caregivers are more likely to be exposed to chronic stressors (Pinquart & Sörensen, 2003). Because caregivers might have greater stress caused by caregiving, psychosocial resilience resources for caregivers may be more important in improving their life satisfaction than for non-caregivers. Another way to interpret these differences in the role of resilience resources on life satisfaction between caregivers and non-caregivers is that those resources are more strongly related to life satisfaction for caregivers than for non-caregivers. Borg and Hallberg (2006) found that the most important factor explaining lower life satisfaction among caregivers were having few social resources, and the relationship between social resources and life

satisfaction among caregivers was stronger than that of non-caregivers.

Inconsistent with our hypothesis, there was no difference in the direct effects of sense of mastery on life satisfaction between spousal caregivers and the matched non-caregivers. Sense of mastery conferred some direct effects among caregiving spouses, but the beneficial effects of sense of mastery were also found in the matched non-caregivers. This finding may relate to several causes. First, this finding suggests that the caregiving experience may not be related to the association between sense of mastery and life satisfaction among caregiving spouses. Second, the sense of mastery measurement used in this study did not assess caregiving specific mastery. Rather, it assessed general sense of mastery over daily life problems. Therefore, the sense of mastery scale used in this study might measure the level of mastery in handling daily life events, as opposed to sense of mastery in dealing with specific challenges of life related to caregiving. Another possible explanation for this finding is that sense of mastery may be an effective personal resource on life satisfaction to a broader range of the population, while openness to experience and emotion regulation are more influential resilience factors in certain groups exposed to a high level of stress, which was suggested earlier while discussing the significant effect of openness to experience on life satisfaction among caregiving spouses.

The Effects of the Wisdom Resources on Self-Rated Physical Health among Spousal Caregivers

Although we found some direct and indirect effects of the wisdom resources on spousal caregivers' life satisfaction, we could not find significant effects of the resources and social supports on self-rated health among caregiving spouses. There are several possible explanations for this finding. Pinquart and Sörensen (2003) found that differences between caregivers and non-caregivers were significantly smaller for physical health than psychological health outcomes. They suggested that this is because psychological health outcomes may reflect immediate negative effects of caregiving experience, as opposed to physical health outcomes, which develop more slowly. Similarly, the

wisdom resources may show positive effects on life satisfaction more quickly than they show the effects on physical health outcomes. An alternative explanation is that the effects of the wisdom resources and social supports may be stronger on life satisfaction than on physical health because those resources are more likely to correlate with psychological health than physical health. This is consistent with previous studies showing that psychosocial resilience resources (e.g., optimism) are less likely to relate to physical well-being than to psychological well-being (Nygren et al., 2005; Trapp et al., 2015). They suggested that psychological resources might not directly relate to physical well-being of caregivers as strongly as they do to psychological well-being. Similarly, Pinquart and Sörensen (2007) suggested that social support assessing emotional support is more likely to be related to psychological health than physical health. Actually, social support measurements in this study only measured emotional support from social relationships. Lastly, no significant effect of the resilience resources on physical health found in our study might be due to the fact that physical health is less likely to be influenced by caregiving stressors than life satisfaction (Pinquart & Sörensen, 2007).

Limitations

The results reported in this study must be interpreted in light of limitations. First, this study did not include information on the subjective or objective burden of caregiving (e.g., the level of stress from caregiving) that may impact the relationship between the wisdom resources and health outcomes. Identifying caregivers' amount of stress is important because caregiving stress is associated with the mechanisms by which the wisdom resources are linked to health. We assumed that the wisdom resources, by relieving their stress, would have positive effects on caregivers' health. This study could be strengthened if we had information on the amount of burden or stress from caregiving experiences. Therefore, future research should test these assumed mechanisms by including more detailed information on levels of caregivers' stress. Second, the generalizability of these findings may be somewhat limited, as the majority of

participants in the MIDUS sample were well-educated Whites. The findings need to be replicated on more diverse groups of caregiving spouses. Next, we did not include reflective attitude, one component of the MORE wisdom resources, because it was difficult to find an existing measurement to represent the construct. Lastly, while the resilience model and the simple mediation approach used in this study suggest that the wisdom resources affect social support and health outcomes, the cross-sectional design of our study does not allow us to know the causal order of these variables. Longitudinal research is needed to test the possibility of causal relationships between the psychosocial resilience factors and health outcomes.

The beneficial effect of openness to experience on life satisfaction suggests that increasing the level of openness to experience may be helpful when it comes to improving life satisfaction. Although, there has been some debate on stability of personality over the life course, recent findings suggest that personality traits can be changed through experiences and interventions (Heckman, Pinto, & Savelyev, 2013; Tang et al., 2009). For example, openness to experience was increased by cognitive training (Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012). These studies suggested that positive changes in personality can occur relatively quickly as a result of interventions. Therefore, interventions aimed at enhancing caregiving spouses' openness to experience through cognitive training (e.g., inductive reasoning training) may benefit life satisfaction among caregiving spouses. In addition, caregiving spouses may benefit most from interventions targeted at strengthening the relationship with the care recipient, although this approach might not be applicable for couples with care receivers at advanced stages of physical and cognitive illness. Interventions targeted to provide skills for spousal caregivers to obtain and maintain positive interactions with care-recipients may help caregiving spouses enhance their life satisfaction (Ingersoll-Dayton & Raschick, 2004; Katz-Saltzman, Biegel, & Townsend, 2008). Improved emotion regulation skills for the caregiving spouse may well be an important part of such programs (e.g., Shapiro, Brown, & Biegel, 2007). More importantly, given the interactive model of resilience, interventions

designed to improve both internal and external resources or personal and environmental resources are more likely to benefit life satisfaction among caregiving spouses. Based on this study, we would suggest that programs aimed at both increasing openness to experience and also improving the spousal relationship would be more likely to have positive effects.

This study applied the resilience model to explain positive outcomes as a result of caregiving experience and found both direct and indirect effects of the wisdom resources on caregivers' life satisfaction. Rather than simply reporting the effects of the wisdom resources on the caregivers' life satisfaction and physical health, we focused on a caregiving subgroup and compared the effects between caregivers and non-caregivers. We included three types of social support and analyzed them separately, which allowed us to identify differences in the role of social support in caregiving spouses' life satisfaction and physical health. The current study suggests that models of resilience could be possible theoretical frameworks explaining life satisfaction among caregiving spouses. Overall, this study demonstrated the usefulness of the wisdom resources on spousal caregivers' life satisfaction, and how the resources interact with other psychosocial resilience factors to enhance their life satisfaction.

Clinical Implications

Our findings have implications for practitioners who are working with caregiving spouses. Overall, this study suggests that spousal caregivers with high levels of psychosocial resilience resources would be more likely to avoid low life satisfaction in the face of caregiving. The findings revealed potential areas for intervention to improve life satisfaction of caregiving spouses.

In summary, consider interventions to:

- Increase "openness to experience" in caregivers through cognitive training.
- Strengthen the relationship of the caregiver and care recipient
- Target both personal and environmental resilience resources

Notes

1. We applied the first version of the MORE life experience model in this study.
2. Higher scores in self-rated physical health scale reflect higher standing in physical health status.
3. Direct and indirect effects were calculated simultaneously in an analysis.

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ORCID

Seungyoun Kim  <http://orcid.org/0000-0001-5090-433X>

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