



# HHS Public Access

Author manuscript

*Soc Work Health Care*. Author manuscript; available in PMC 2016 May 11.

Published in final edited form as:

*Soc Work Health Care*. 2015 ; 54(7): 651–668. doi:10.1080/00981389.2015.1054058.

## Stressors and Caregivers' Depression: Multiple Mediators of Self-Efficacy, Social Support, and Problem-solving Skill

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### Abstract

Caring for an older adult with memory loss is stressful. Caregiver stress could produce negative outcomes such as depression. Previous research is limited in examining multiple intermediate pathways from caregiver stress to depressive symptoms. This study addresses this limitation by examining the role of self-efficacy, social support, and problem-solving in mediating the relationships between caregiver stressors and depressive symptoms. Using a sample of 91 family caregivers, we tested simultaneously multiple mediators between caregiver stressors and depression. Results indicate that self-efficacy mediated the pathway from daily hassles to depression. Findings point to the importance of improving self-efficacy in psychosocial interventions for caregivers of older adults with memory loss.

### Keywords

caregiving; depression; self-efficacy; caregiver stressor; mediation effects

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In 2013, over 15 million Americans provided unpaid care for people with Alzheimer's disease (AD) and other dementias (Alzheimer's Association, 2014). Most older adults with

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dementia who live in the community receive assistance from their spouse and/or adult children (Schulz & Martire, 2004). Compared with caring for persons with other illnesses, dementia caregiving is particularly demanding and stressful due to the duration of illness, degree of functional dependence, and prevalence of behavioral disturbances (Ory, Hoffman, Yee, Tennstedt, & Schulz, 1999). Despite benefits from caregiving, such as family togetherness and satisfaction of helping others (Zarit, 2012), family caregivers are at increased risk of adverse physical and psychological outcomes (Givens, Mezzacappa, Heeren, Yaffe, & Fredman, 2014). Depression is one of the most important potential adverse consequences of dementia caregiving (Covinsky et al., 2003). A growing body of evidence suggests high prevalence and incidence of depressive and anxiety disorders among family caregivers for older adults with dementias (e.g., Givens et al., 2014; Schulz & Martire, 2004). It is estimated that between 30 and 40 percent of dementia caregivers suffer from depression (Covinsky et al., 2003; Harwood et al., 1998). A recent study documents that clinical depression was as high as 63 percent in a sample of hospitalized dementia caregivers (Epstein-Lubow et al., 2012). Thus it is important to understand how caregiver stress is associated with depression and how family caregivers cope with that stress and reduce the negative effects of caregiving on their mental health.

The stress and coping model has been proposed and developed to examine caregiver stress and coping in the stress process (Haley, Levine, Brown, & Bartolucci, 1987; Lazarus & Folkman, 1984; Pearlin, Lieberman, Menaghan, & Mullan, 1981). According to the model, caring for an older adult with memory loss is a stress process because of the care recipient's problematic behaviors and the caregiver's emotional reactions toward the problematic behaviors, which in turn produce negative outcomes, or psychiatric morbidity in the caregiver, such as depression (Mausbach et al., 2012). Indeed, care recipient's behavioral problems such as anger and aggressiveness are the most frequently endorsed stressor of dementia caregiving and have more influential effects on caregiver depression than care recipient's cognitive impairment and other factors (see Covinsky et al., 2003; Schultz & Martire, 2004). Further, stress comes not only from external factors of care recipient behavioral and cognitive problems, but more importantly, results from caregivers' responses to the caregiving demands and the relationship with their environment. In addition, psychosocial stress comes from both major negative events (e.g., divorce) and minor problems or daily hassles (e.g., argument with partner) (Schubert, Lambert, Nelesen, Bardwell, Choi, & Dimsdale, 2008). Daily hassles or minor irritations occur frequently and cause tension and unexpected disruptions (Aldwin, Jeong, Igarashi, & Spiro, 2014). These chronic, daily stressors would affect caregivers as they can accumulate over time along with primary caregiver stressors, thus aggravating the caregiving-related distress and increasing the risk for depression.

Further, the stress and coping model suggests that certain coping or behavioral factors mediate or explain the relationship between life stress and negative outcomes (Mausbach et al., 2012). Mediating variables, including appraisals of problems, self-efficacy, coping responses, and social support are important in predicting the outcomes of stress (Haley et al., 1987). Higher self-efficacy, benign appraisals of stress, greater social support, and problem-focused coping strategies were related to fewer caregiver depressive symptoms and better life satisfaction (Haley et al., 1987; Haley et al., 1996). Similarly, Mausbach and colleagues

(2012) found that personal mastery, self-efficacy, and avoidance coping significantly mediated the relationship between caregiver stress and depressive symptoms in a sample of spouse caregivers of patients with AD.

In line with the stress and coping model (Haley et al., 1987; Lazarus & Folkman, 1984; Pearlin et al., 1981), the present study seeks to improve our understanding of the effect of caregiver stress on depressive symptoms and how the pathway from stress to depression is mediated by self-efficacy, social support, and problem-solving skill. Caregiver stresses include the primary stressor of memory loss by care recipients and the daily hassles experienced by caregivers. The care recipient's behavioral and psychological problems are one of the primary stressors of caregiving, which may lead to caregiver strains such as family conflict and social life, and intrapsychic strains such as personality and competence (Pearlin, Mullan, Semple, & Skaff, 1990; Schultz & Martire, 2004). Strains can develop into psychological morbidity, including depression and anxiety (Brodar & Donkin, 2009). In this study, we assess problematic behaviors in three domains, that is, memory-related problems (e.g., asking repeated questions), depression (e.g., crying), and disruptive behaviors (e.g., verbal aggression) in older adults with memory loss. In addition, measures of daily hassles are used as indicators of caregiver stress. Our main purpose is to test the effects of multiple mediators of self-efficacy, social support, and problem-solving skill on the relationships between caregiver stressors and depressive symptoms.

Self-efficacy is the "confidence in one's ability to engage in situation-specific strategies for coping with stress" (Mausbach et al., 2012, p.2). It is concerned with caregivers' appraisal of care recipient's distressful problem and their assessment of the ability to complete a specific task (Bandura, 1982; 1997). Caregiver stresses are related to care recipient's behavioral and psychological symptoms of dementia and may impair caregiver's sense of self-efficacy for coping effectively with the demands of caregiving (Pinquart & Sorensen, 2003; Zhang, Edwards, Yates, Guo, & Li, 2013). Previous studies have documented that dementia caregivers had significantly lower levels of self-efficacy than caregivers of people with other diseases (e.g., Son et al., 2007) and that less self-efficacy was associated with increased depressive symptoms after controlling for objective stressors (Gilliam & Steffen, 2006). A few studies documented the mediation role of self-efficacy on the pathway from stress to depression (Mausbach et al., 2012; Zeiss, Gallagher-Thompson, Lovett, Rose, & McKibbin, 1999).

Social support, or individual perceptions of available people resources, plays a significant role in minimizing the negative outcomes of caregiver stress (Thielemann & Conner, 2009). Social support resources, such as a large social network, frequent social contacts, and the ability to arrange for assistance from friends, can mitigate the adverse effects of caregiver stress on depression (Sorensen & Conwell, 2011). Dementia caregivers are likely to become socially isolated (Pinquart & Sorensen, 2006). A negative correlation has been found between social support and depression in dementia caregivers (Schulz & Williamson, 1991). Using a sample of caregivers of patients with advanced cancer, Thielemann and Conner (2009) found that social support partially mediated the relation between caregiving demands and caregiver depression.

Problem-solving is a self-directed cognitive-behavioral process whereby a person attempts to seek effective or adaptive solutions for specific problems (Demiris et al., 2010). Stress is a function of the reciprocal relations among stressful life events and daily problems, emotional stress responses, and problem-solving coping; a stressful situation affects both the quality and intensity of stress responses through cognitive appraisal and coping (Demiris et al., 2010). Improved problem-solving skills are related to reduced depressive symptoms and better quality of life; thus problem-solving interventions are often implemented to assist caregivers in coping with stresses and related adverse outcomes (Demiris et al., 2010). Problem-solving may assist caregivers in finding effective coping strategies that could further mediate the effect of stress on depression. As shown in a meta-analysis study, a coping mechanism such as emotion-focused and acceptance-based coping was related to less depression in dementia caregivers (Li, Cooper, Bradley, Shulman, & Livingston, 2012).

Although numerous studies have examined the factors related to depression in dementia caregivers, the roles of multiple mediators between stress and depressive symptoms have little been studied. A better understanding of multiple pathways from stress to depression is warranted to design and implement effective interventions for caregiver depression and other negative outcomes. Building on the stress and coping model (Haley et al., 1987) and an empirical study (Mausbach et al., 2012), this current study examines the relationships between potential sources of caregiver stress and depression and tests simultaneously the mediation effects of self-efficacy, social support, and problem-solving skill on the relationships. Prior studies often focused on care recipient's problematic behaviors without accounting for daily hassles that could be cumulative and contribute to depressive symptoms in caregivers. Using both measures of potential sources of stress – problematic behaviors in care recipients and daily hassles experienced by caregivers, we hypothesize that 1) higher levels of stressors are related to lower levels of self-efficacy, perceived social support, and problem-solving skill; 2) higher levels of caregiver stressors are associated with more depressive symptoms; 3) self-efficacy, social support, and problem-solving skill mediate the relationship between caregiver stressors and depressive symptoms, that is, after controlling for the direct and indirect effects of these three mediators, the relationships between caregiver stressors and depressive symptoms become statistically less significant or non-significant.

## Methods

### Study Participants

The study sample consisted of 91 family caregivers of older adults with memory loss. To be eligible, older adult patients had to have self- or caregiver-reported memory loss, live in the community, have a family/informal caregiver, have at least two co-morbid conditions for which they were prescribed medications, and were unable to self-manage their medications. Family and informal caregivers had to assist patients with medication management, speak English, and have access to a telephone. Participants were recruited from multiple community sites, geriatric practices, a memory disorders clinic, targeted mailing lists, and the patient registry through the participating university's Clinical and Translational Science Institute. The university's Institutional Review Board approved the study protocols and all

participants were provided with written, informed consent prior to participation in the study. After older adults agreed to participate, a home visit was conducted to those caregivers and patients who met the initial screening criteria. This analysis used the baseline data composed of the questionnaires and interviews completed during the home visit and additional questionnaires completed and returned by mail.

## Measures

**Depressive symptoms**—Participants completed the Beck Depression Inventory II (Beck, Steer, & Brown, 1996), which contains 21 self-reported items assessing the presence and severity of depression in adults and adolescents. Responses were given on a 4-point Likert scale ranging from 0 to 3, based on severity of each item. Items were added and the summary score was used (range: 0–30). A higher score indicates worse depressive symptoms. Scores of 10 to 15 reflect mild depressive symptoms, 16 to 23 reflect moderate depressive symptoms, and 24 to 63 reflect severe depressive symptoms. The scale had high internal consistency (Cronbach's  $\alpha=.86$ ) in this study.

**Stressors**—We used the 24-item Revised Memory and Behavior Problems Checklist (RMBPC) to assess the frequency of patient behavioral problems and caregiver reactions to the problems (Teri, Uomoto, Zarit, & Vitaliano, 1992). Two subscales i.e., frequency and reaction, were used in the analysis. Frequency is the rate of occurrence of individual behaviors (range: 0–84), and reaction represents the extent to which patient behaviors affect the caregiver (range: 0–89); higher scores indicate more behavior problems and more negative reactions. Internal consistency was very good, with Cronbach's alpha coefficients of .88 for frequency and .94 for reaction in the current study.

In addition, the Hassles Subscale of the Combined Hassles and Uplifts Scale (CHUS) (Lazarus & Folkman, 1989) was used to assess minor stressors that are part of everyday life. The scale has 53 items with responses given on a 4-point Likert scale ranging from 0 (none or did not occur) to 3 (extremely severe), with good reliability and validity (Schubert et al., 2010). We selected the hassles frequency (range: 1–44) and hassles average severity (range: 1–2.53) as the measures for everyday stress in the analysis. Internal consistency in this sample of caregivers was very good (Cronbach's  $\alpha = .92$ ).

**Self-efficacy**—The Chronic Disease Self-efficacy Scale (P. Ritter & K. Lorig, personal communication, September 10, 2009) was used to measure caregiver confidence in completing selected activities. This 7-item scale contains the original six items (Lorig et al, 1989) plus one item on communication with health care providers on patient's problems. It is a unidimensional measure, as respondents were asked about the confidence in managing caregiving-related activities, such as fatigue, physical discomfort, emotional distress, and any other health problems that are caused by caring for their family members. A 10-point scale from 0 (not at all confident) to 10 (totally confident) was used to rate each item. The summary score ranged from 2.28 to 10, higher scores indicating better self-efficacy. Previous research indicates that this scale has good reliability and validity (Erlen et al., 2013). Cronbach's alpha coefficient was .88 in this study.

**Social support**—The Interpersonal Support Evaluation List (ISEL) (Cohen & Hoberman, 1983) was used to assess the perceived availability of support. The ISEL contains 40 items with responses given on a 4-point scale from 0 (definitely false) to 3 (definitely true). A summary score was used (range: 38–118) and higher scores indicate better social support. For the current study, Cronbach’s alpha coefficient was .94.

**Problem-solving skill**—The 35-item Problem Solving Inventory (PSI) (Heppner & Peterson, 1982) was used to evaluate the caregiver perceptions of their capabilities with regard to problem-solving behaviors and attitudes. The total PSI is the most popular measure that is used as an index of overall problem-solving ability (D’Zurilla, Nezu, & Maydeu-Olivares, 2004). For the current sample, the Cronbach’s alpha coefficient was .90. A summary score (range: 37–179) was used, lower scores suggesting better problem-solving ability.

### Data analysis

Multiple mediation effects of self-efficacy, social support, and problem-solving were examined simultaneously on the relationships between caregiver stressors and depressive symptoms. Because four measures (i.e., RMBPC frequency, RMBPC reaction, daily hassles frequency, and daily hassles severity) were used to indicate caregiver stress, we tested the multiple mediation effects in four models in which each of the stressor variables was used as the main predictor of depression and self-efficacy, social support, and problem-solving were included as mediators. Daily hassles severity was the stressor indicator in Model 1, daily hassles frequency in Model 2, RMBPC reaction in Model 3, and RMBPC frequency in Model 4. In each model, the outcome variable of depressive symptoms was regressed on the stressor measure (e.g., daily hassles severity in Model 1), while controlling for three mediators. First, the three proposed mediators were regressed on daily hassles severity. Then depressive symptom was regressed on three mediators. Lastly, daily hassles severity and three mediators were all included in predicating depressive symptoms. This procedure assessed the direct effect of stressor and the total and specific indirect effects of three mediators on depressive symptoms. The same procedures were applied in Models 2, 3, and 4, respectively.

In addition, the bias corrected bootstrapping method was applied in testing the multiple mediating effects, as suggested by Preacher and Hayes (2008). Bootstrapping methods have been widely known and applied, because they are effective in increasing power and controlling over the Type I error, especially when multivariate normality cannot be assumed in small samples (Mausbach et al., 2012; Preacher & Hayes, 2008). In this study, we used five thousand bootstrapping samples. This procedure generated 5000 estimates of the total and specific indirect effects through repeated resampling and re-estimating, and then the average estimates were provided. These estimates could provide empirical, nonparametric approximation of the sampling distribution of mediation effects (Preacher & Hayes, 2008). Mplus version 5 was used for the analysis.

Less than nine percent of the observations had missing values on seven variables, i.e., RMBPC frequency, RMBPC reaction, daily hassles frequency, daily hassles severity, self-

efficacy, social support, and problem-solving. A hot decking imputation procedure was applied to complete the missing data so that all observations were used in the regression analyses.

## Results

Caregivers in the study sample were across a wide range of ages with a mean of 67 years. They were well-educated with an average of about 15 years of education, primarily female (70%), White (85%), married (77%), not in the labor force (79%), spouse caregiver (57%), and living with care recipient (87%) (Table 1). Table 1 also presents the descriptive statistics of key variables. Overall, caregivers reported a minimal level of depressive symptoms ( $M=9.8$ ,  $SD=7.8$ ), moderate levels of social support ( $M=84.1$ ,  $SD=18.1$ ) and problem-solving ability ( $M=87.8$ ,  $SD=22.6$ ), and a relatively high level of self-efficacy ( $M=7.1$ ,  $SD=2.1$ ). Caregivers identified a relatively lower level of patient disruptive behaviors ( $M=33.6$ ,  $SD=14.7$ ) and a moderate level of daily hassles ( $M=24.5$ ,  $SD=14.7$ ) in terms of frequency.

Table 2 presents the Pearson correlation coefficients among key variables of interest. Caregiver stressors, that is, RMBPC frequency and reaction were not associated with depressive symptoms and other variables. But daily hassles frequency and severity were correlated with all other variables except RMBPC scores and problem-solving. All three mediation variables showed significant correlations with the outcome variable of depressive symptoms.

The results of the four models on multiple mediation effects are presented in Tables 3a–d. As shown in Table 3a, greater daily hassles was significantly related to less self-efficacy ( $b=-1.578$ ,  $SE=.471$ ,  $z=-3.530$ ,  $p<.001$ ) and less social support perceived ( $b=-10.035$ ,  $SE=4.330$ ,  $z=-2.317$ ,  $p<.05$ ), but not related to problem-solving skill. When three mediators and daily hassles severity were all regressed on depressive symptoms, self-efficacy was negatively associated with depressive symptoms ( $b=-1.647$ ,  $SE=.360$ ,  $z=-4.576$ ,  $p<.001$ ). The specific indirect or mediation effect of self-efficacy ( $b=2.600$ ,  $SE=.887$ ,  $z=2.930$ ,  $p<.01$ ), and the total mediation effects of three mediators ( $b=3.259$ ,  $SE=1.056$ ,  $z=3.086$ ,  $p<.01$ ) were statistically significant. Without including the multiple mediators, daily hassles severity was significantly associated with depressive symptoms ( $b=6.357$ ,  $SE=1.734$ ,  $t=3.167$ ,  $p<.001$ ) (not shown in Table 3a). After adding the mediators, this relationship became statistically non-significant, which suggested that self-efficacy completely mediated the negative effects of daily hassles severity on depression.

Similarly, daily hassles frequency was significantly associated with depressive symptoms before adding the mediators to the model ( $b=.288$ ,  $SE=.076$ ,  $t=3.81$ ,  $p<.001$ ) (Figure 1). However, this relationship became non-significant after controlling for mediation effects ( $b=.120$ ,  $SE=.072$ ,  $z=1.670$ ,  $p=.095$ ) (see Table 3b). Results showed that more frequent daily hassles was related to less self-efficacy ( $b=-.086$ ,  $SE=.020$ ,  $z=-4.270$ ,  $p<.001$ ), and less perceived social support ( $b=-.436$ ,  $SE=.182$ ,  $z=-2.393$ ,  $p<.05$ ), but not related to problem-solving. Self-efficacy was negatively associated with depressive symptoms ( $b=-1.603$ ,  $SE=.391$ ,  $z=-4.102$ ,  $p<.001$ ), and mediated the relationship between daily hassles frequency and

depressive symptoms ( $b=.138$ ,  $SE=.044$ ,  $z=3.131$ ,  $p<.01$ ). The total mediation effects of three mediators were statistically significant ( $b=.168$ ,  $SE=.049$ ,  $z=3.403$ ,  $p<.001$ ). A complete description of these relationships is presented in Figure 1.

In Models 3 and 4, neither RMBPC reaction nor frequency was directly related to depressive symptoms. None of the three mediators was significant in mediating the relationship between stress and depression (see Tables 3c and 3d). However, there were significant direct effects of self-efficacy on stress reaction ( $b=-1.794$ ,  $SE=.347$ ,  $z=-5.174$ ,  $p<.001$ ), and stress frequency ( $b=-1.846$ ,  $SE=.351$ ,  $z=-5.261$ ,  $p<.001$ ), respectively. Also social support was negatively related to stress reaction ( $b=-.080$ ,  $SE=.039$ ,  $z=-2.049$ ,  $p<.05$ ), and stress frequency ( $b=-.076$ ,  $SE=.039$ ,  $z=-1.959$ ,  $p<.05$ ).

## Discussion

Caring for an older adult with dementia can be stressful and burdensome. As a consequence, family caregivers are at elevated risk of psychiatric and physical morbidity. In order to best design interventions that address the burden and stress of caregiving and lessen morbidity in this population, a strong, empirically validated theoretical approach is needed. This study provides evidence that self-efficacy significantly explains the relationship between daily hassles and depressive symptoms in a sample of family caregivers for older adults with memory loss. Based on the stress and coping model (Haley et al., 1987) and empirical evidence in previous literature, we first identified three potential mediators, namely, self-efficacy, perceived social support availability, and problem-solving capacity. After testing three mediators simultaneously, we found that only self-efficacy mediates the effect of daily hassles on depressive symptoms in caregivers.

The mediating effect of self-efficacy underscored in this study supports the stress and coping model, suggesting that daily hassles rather than patient problem behaviors affects caregiver appraisal of demands and confidence in completing specific tasks, and the impaired self-efficacy further increases depressive symptoms. Daily hassles occur more frequently and have direct effects on self-efficacy and indirect effects on depression, indicating daily frustration caused by daily hassles is the main reason for stress and undermines health (Lazarus & Folkman, 1984). If caregivers perceive stressful demands from everyday interactions with the environment of caring for a dementia patient, they may perceive inadequate coping resources and experience stresses and the subsequent adverse psychological outcomes such as depression. In particular, the study shows that daily hassles could impair the caregiver confidence in managing the caregiving tasks and perceive less support availability in family caregivers of older adults with memory loss.

It is surprising that patient behavioral problems were not related to caregiver depressive symptoms in this study. One potential explanation is that the patients in the study sample might not have exhibited severe behavioral problems during the observation period. In addition, caregivers might be able to handle and react to patients' minor behavioral problems in a positive way, as they were relatively well-educated with an average of 15 years of education, indicating they might have sufficient knowledge in caring for memory-loss



patients. Also it might be possible that some caregivers conceal or deny patient problems and their negative reactions to the problems when being studied.

Inconsistent with previous research (e.g., Haley et al., 1987; Mausbach et al., 2012), this study does not find the significant mediating effects of social support and problem-solving on the pathway from stress to depression. However, social support along with self-efficacy has direct significant relationship with depressive symptoms in all four models, indicating the risk factors for psychiatric outcomes in family caregivers. The findings point to the importance of socio-psychological interventions that target improving social support and self-efficacy in caregivers. Although considerable research demonstrated the importance of social support, the specific mechanism through which social support affects individual well-being is not well understood (Au et al., 2009). As we mentioned, study subjects might be able to deal with the challenges in caregiving, probably due to their high levels of self-efficacy and relatively low levels of disruptive behaviors of older adults. Social support may play a role when caregivers perceive intense caregiving demands and stressful caregiving process, which may not be the case in this study. Future studies need to include samples of dementia caregivers with various levels of stress and depressive symptoms.

In addition, the measure of problem-solving was not associated with any of the stressor variables, probably because items in the Problem Solving Inventory were all linked to general situations but not to caregiving-related, specific problems; for example, respondents were asked to rate such statements as “when a solution to a problem was unsuccessful, I did not examine why it did not work.” These general problem-solving capacities may not be effective in dealing with caregiver stressors. Previous studies focused on specific coping mechanisms, such as logical analysis, information seeking, and affective regulation, and documented the significance of coping strategies in improving caregiver well-being (e.g., Haley et al., 1987). Therefore, we suggest that future studies examine the role of specific problem-solving skills or coping strategies in relation to caregiver stress and depression.

In terms of clinical applications, the study suggests that psycho-educational interventions targeting self-efficacy for dealing with daily hassles would be effective in reducing depressive symptoms in caregivers. Social workers working with dementia patients and their caregivers need to assist caregivers in managing the stressors from everyday life and from the disruptive behaviors of the care recipient, and help improve their confidence and ability to manage the disease and related specific tasks. Social workers can teach caregivers cognitive and behavioral strategies for managing frustrations and help increase caregiver engagement in pleasant events. Both approaches are found effective in improving self-efficacy and reducing depression in dementia caregivers (Coon, Thompson, Steffen, Sorocco, & Gallagher-Thompson, 2003). However, because many factors are associated with caregiver depression, they need to be addressed from multiple clinical and social perspectives (Covinsky et al., 2003). Caregiver depression is not a problem induced by any single risk factor, but rather the interactive effects of multiple risk factors (Covinsky et al., 2003). Therefore, combined interventions targeting multiple aspects of the caregiver stress process and targeting both caregiver and care recipient simultaneously have the potential to produce better caregiving outcomes (Schulz & Martire, 2004).

There are limitations in this study. First, the current study used a cross-sectional design and thus cannot verify the pathway directionality from stress to depression. Second, this analysis did not include all the factors (such as background and context variables, secondary role strains, and intrapsychic strains) and did not examine their interrelationships with the outcome variable. The stressor variables were limited to patient behavioral problems and daily hassles experienced by caregivers. In addition, the small sample size does not allow testing the complicated relationships among multiple variables. Lastly, the general measure of problem-solving may not be valid in testing its relationship with specific stressors and caregiver depression. Improvement in measurement and study design, as well as using large, representative samples will allow future research to fully examine the multiple pathways from stress to depression.

Despite these limitations, this study improves our understanding of the important role of self-efficacy in mediating the effect of daily hassles on caregiver depression, providing evidence for psychosocial interventions targeting caregiver self-efficacy as a start to address caregiver distress and depression. Social workers are in a position to assist family caregivers in addressing daily problems that may further intensify caregiving stress and its negative outcomes. Researchers and practitioners need to rely on a well-tested conceptual framework like the stress and coping model presented here and strong empirical evidence to develop effective interventions for reducing the stress and depression associated with caring for a person with memory loss or dementia.

## Acknowledgments

This study was supported by NIH/NINR, P01 NR010949, Adherence & HRQOL: Translation of Interventions, J. Dunbar-Jacob, Principal Investigator and by NIH/NIA, P50 AG05133, Alzheimer Disease Research Center, O. Lopez, Principal Investigator.

We would also like to thank the research staff, student workers, our Community Advisory Board, and the many caregivers and patients who willingly participated in this study.

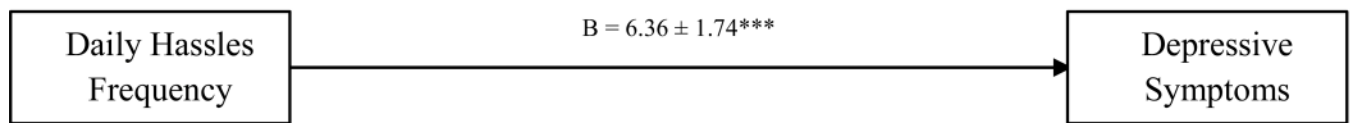
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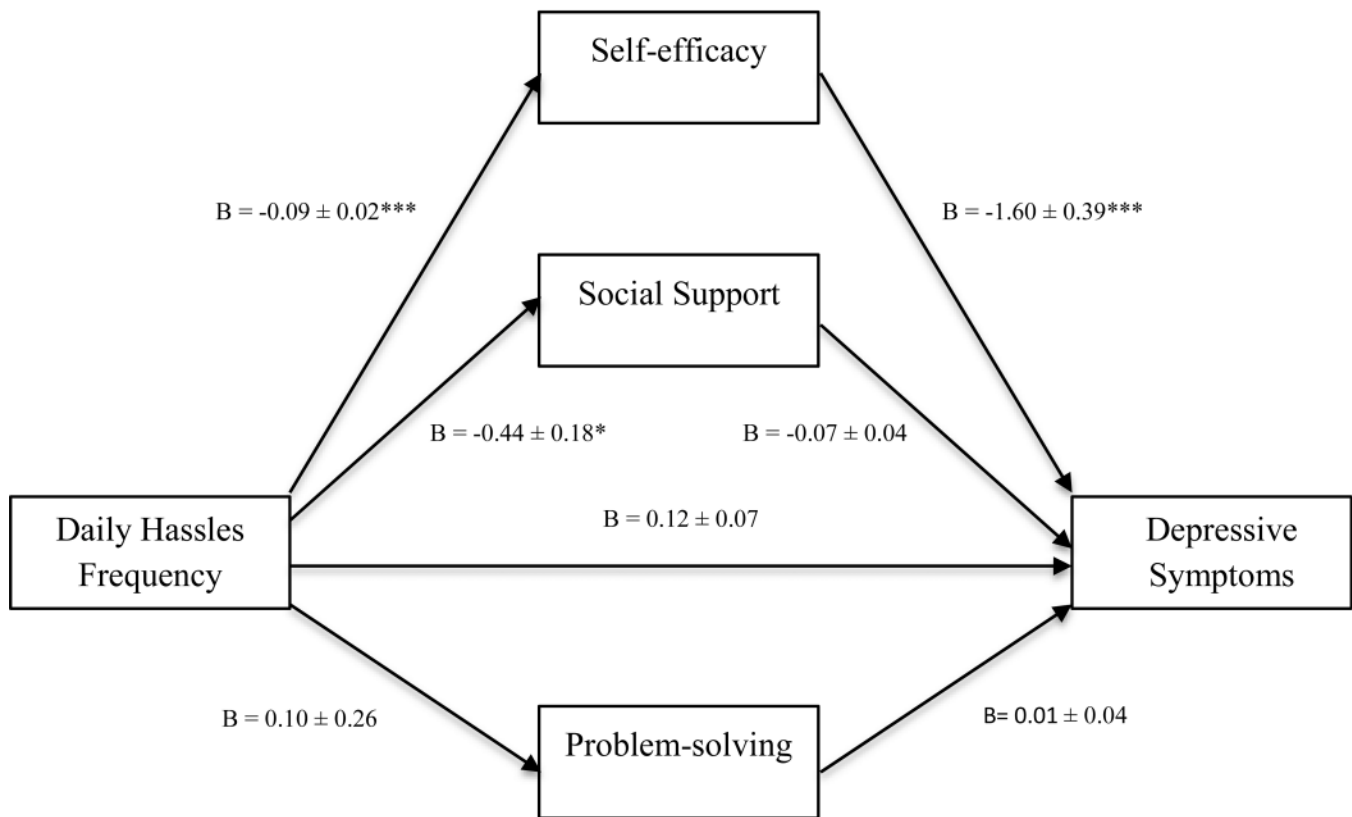
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A



B

**Figure 1.**

Multiple mediations of self-efficacy, social support, and problem-solving on the relationship between daily hassles frequency and depressive symptoms. Graphic A depicts the total effect of daily hassles frequency on depressive symptoms. Graphic B depicts the direct effect of daily hassles frequency on depressive symptoms after including mediators. Statistics are unstandardized regression coefficients  $\pm$  standard error.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Table 1**

Sample Descriptive (N=91).

<b>Variables</b>	<b>Frequency(%) / Mean(SD)</b>
<u>Demographics</u>	
Age in years (range 42–93)	66.97 (12.18)
Education in years (range 9–30)	14.91 (3.31)
Female	64 (70%)
Race	
White	77 (85%)
Non-White	14 (15%)
Marital status	
Married	70 (77%)
Not married	21 (23%)
Employment status	
Employed	19 (21%)
Not in the labor force	72 (79%)
Caregiver relationship	
Spouse	52 (57%)
Non-spouse	39 (43%)
Living arrangement	
In same household	79 (87%)
In different household	12 (13%)
<u>Key variables</u>	
Depressive symptoms (range 0–30)	9.81 (7.79)
Self-efficacy (range 2.28–10)	7.11 (2.06)
Social support (range 38–118)	84.11 (18.06)
Problem-solving (range 37–179)	87.79 (22.57)
RMBPC reaction (range 0–84)	22.99 (17.88)
RMBPC frequency (range 0–89)	33.63 (14.67)
Daily hassles frequency (range 1–44)	24.54 (10.13)
Daily hassles severity (range 1–2.53)	1.52 (0.44)

Table 2

Correlations among key variables (N=91).

Variables	1	2	3	4	5	6	7
1. RMBPC frequency	1.00						
2. RMBPC reaction	0.60 <sup>***</sup>						
3. Daily hassles frequency	0.06	-0.04					
4. Daily hassles severity	0.04	-0.03	0.41 <sup>***</sup>				
5. Social support	0.07	0.09	-0.24 <sup>*</sup>	-0.25 <sup>*</sup>			
6. Problem-solving	-0.00	0.02	0.04	0.06	-0.28 <sup>**</sup>		
7. Self-efficacy	-0.10	-0.17	-0.42 <sup>***</sup>	-0.34 <sup>**</sup>	0.40 <sup>***</sup>	-0.38 <sup>***</sup>	
8. Depressive symptoms	0.06	0.13	0.37 <sup>***</sup>	0.36 <sup>***</sup>	-0.37 <sup>***</sup>	0.23 <sup>*</sup>	-0.56 <sup>***</sup>

\*  $p < .05$ ;\*\*  $p < .01$ ;\*\*\*  $p < .001$

**Table 3**

<b>a. Mediation Effects of Self-efficacy, Social Support, and Problem-solving on the Effect of Daily Hassles Severity on Depressive Symptoms (Model 1) (N=91)</b>									
	Point Estimate	Product of Coefficients		Bootstrapping					
		SE	Z	Percentile 95% CI		Bias Corrected 95% CI		Lower	Upper
<b>Direct Effects</b>									
Daily hassles severity -> self-efficacy	-1.578	0.471	-3.530***	-2.733	-0.298	-2.461	-0.628		
Daily hassles severity -> social Support	-10.035	4.330	-2.317*	-22.075	0.246	-19.139	-2.298		
Daily hassles severity -> problem-solving	3.257	5.489	0.593	-11.557	16.816	-8.073	12.538		
Daily hassles severity -> depression	3.094	1.618	1.912	-0.818	7.788	0.177	6.434		
Self-efficacy-> depression	-1.647	0.360	-4.576***	-2.609	-0.729	-2.367	-0.966		
Social support -> depression	-0.064	0.037	-1.718	-0.167	0.031	-0.137	0.008		
Problem solving-> depression	0.006	0.034	0.177	-0.068	0.107	-0.051	0.083		
<b>Indirect/Mediation Effects</b>									
Self-efficacy	2.600	0.887	2.930***	0.759	5.549	1.180	4.791		
Social support	0.640	0.507	1.263	-0.183	2.698	-0.005	2.149		
Problem-solving	0.020	0.221	0.090	-0.495	1.041	-0.279	0.697		
<b>Total Mediation Effects</b>	3.259	1.056	3.086***	0.769	6.508	1.410	5.566		
<b>b. Mediation Effects of Self-efficacy, Social Support, and Problem-solving on the Effect of Daily Hassles Frequency on Depressive Symptoms (Model 2) (N=91)</b>									
	Point Estimate	Product of Coefficients		Bootstrapping					
		SE	Z	Percentile 95% CI		Bias Corrected 95% CI		Lower	Upper
<b>Direct Effects</b>									
Daily hassles frequency -> self-efficacy	-0.086	0.020	-4.270***	-0.136	-0.035	-0.125	-0.046		
Daily hassles frequency -> social support	-0.436	0.182	-2.393*	-0.907	0.038	-0.800	-0.070		
Daily hassles frequency -> problem-solving	0.099	0.259	0.381	-0.644	0.733	-0.444	0.569		
Daily hassles frequency -> depression	0.120	0.072	1.670	-0.064	0.301	-0.023	0.258		
Self-efficacy-> depression	-1.603	0.391	-4.102***	-2.588	-0.578	-2.370	-1.603		



**b. Mediation Effects of Self-efficacy, Social Support, and Problem-solving on the Effect of Daily Hassles Frequency on Depressive Symptoms (Model 2) (N=91)**

	Point Estimate	Product of Coefficients		Bootstrapping			
		SE	Z	Percentile 95% CI		Bias Corrected 95% CI	
				Lower	Upper	Lower	Upper
Social support -> depression	-0.067	0.039	-1.740	-0.173	0.032	-0.143	0.009
Problem solving-> depression	0.008	0.035	0.238	-0.067	0.103	-0.053	0.082
<b>Indirect/Mediation Effects</b>							
Self-efficacy	0.138	0.044	3.131**	0.050	0.278	0.070	0.248
Social support	0.029	0.022	1.332	-0.010	0.115	0.000	0.091
Problem-solving	0.001	0.010	0.080	-0.023	0.047	-0.014	0.033
<b>Total Mediation Effects</b>	0.168	0.049	3.403***	0.054	0.304	0.082	0.276

**c. Mediation Effects of Self-efficacy, Social Support, and Problem-solving on the Effect of RMBPC Reaction on Depressive Symptoms (Model 3) (N=91)**

	Point Estimate	Product of Coefficients		Bootstrapping			
		SE	Z	Percentile 95% CI		Bias Corrected 95% CI	
				Lower	Upper	Lower	Upper
<b>Direct Effects</b>							
RMBPC reaction-> self-efficacy	-0.020	0.014	-0.140	-0.059	0.013	-0.049	0.005
RMBPC reaction-> social support	0.096	0.116	0.827	-0.225	0.371	-0.144	0.310
RMBPC reaction-> problem-solving	0.019	0.129	0.150	-0.391	0.324	-0.259	0.254
RMBPC reaction-> depression	0.030	0.045	0.655	-0.069	0.169	-0.050	0.127
Self-efficacy-> depression	-1.794	0.347	-5.174***	-2.685	-0.914	-2.522	-1.146
Social support -> depression	-0.080	0.039	-2.049*	-0.201	0.011	-0.164	-0.011
Problem solving-> depression	0.001	0.034	0.025	-0.074	0.101	-0.059	0.075
<b>Indirect/Mediation Effects</b>							
Self-efficacy	0.035	0.027	1.318	-0.020	0.128	-0.006	0.102
Social support	-0.008	0.010	-0.739	-0.047	0.015	-0.037	0.007
Problem-solving	0.000	0.005	0.004	-0.013	0.013	-0.009	0.007
<b>Total Mediation Effects</b>	0.027	0.033	0.818	-0.044	0.125	-0.028	0.102

**d. Mediation Effects of Self-efficacy, Social Support, and Problem-solving on the Effect of RMBPC Frequency on Depressive Symptoms (Model 4) (N=91)**

	Point Estimate	Product of Coefficients		Bootstrapping					
		SE	Z	Percentile 95% CI		Bias Corrected 95% CI		Upper	
				Lower	Upper	Lower	Upper	Lower	Upper
<b>Direct Effects</b>									
RMBPC frequency -> self-efficacy	-0.013	0.015	-0.882	-0.053	0.028	-0.044	0.016		
RMBPC frequency-> social Support	0.081	0.124	0.656	-0.260	0.379	-0.181	.0312		
RMBPC frequency-> problem-solving	-0.003	0.141	-0.023	-0.377	0.353	-0.289	0.275		
RMBPC frequency-> depression	0.013	0.052	0.249	-0.118	0.142	-0.088	0.113		
Self-efficacy-> depression	-1.846	0.351	-5.261***	-2.734	-0.935	-2.557	-1.177		
Social support -> depression	-0.076	0.039	-1.959*	-0.197	0.016	-0.162	-0.006		
Problem solving-> depression	0.000	0.052	0.249	-0.078	0.104	-0.063	0.077		
<b>Indirect/Mediation Effects</b>									
Self-efficacy	0.025	0.029	0.844	-0.047	0.117	-0.027	0.092		
Social support	-0.006	0.011	-0.543	-0.060	0.016	-0.041	0.009		
Problem-solving	0.000	0.005	0.000	-0.019	0.017	-0.011	0.012		
<b>Total Mediation Effects</b>	0.019	0.036	0.518	-0.069	0.126	-0.046	0.098		

\* p<.05;  
 \*\* p<.01;  
 \*\*\* p<.001