

The Interplay Among Mindfulness, Caregiver Burden, and Mental Health in Family Members of Individuals With Dementia

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Caring for a person with dementia often results in high levels of perceived burden, poorer overall mental health, and a reduced quality of life (QoL). Using a sample of 106 dementia caregivers, we examined associations among caregiver objective and subjective burden (from the Burden Assessment Scale), mindfulness (from The Five Facet Mindfulness Questionnaire) and a mental health latent variable (with the Beck Depression Inventory, the Beck Anxiety Inventory, the Depression and Anxiety Stress Scale, and the Quality of Life Inventory as indicators). As expected, we found that lower levels of burden and greater mindfulness were associated with better mental health. Also in line with study hypotheses and with the stress-appraisal-coping model developed by Lazarus and Folkman (1984), we found that subjective burden partially mediates the relationship between objective burden and mental health outcomes. Specifically, subjective appraisals of caregiving appeared to indirectly affect the association between the concrete costs of caregiving and psychological outcomes in dementia caregivers. This finding suggests the potential for negative psychological outcomes to be improved by addressing caregivers' appraisals of the caregiving experience. Finally, we hypothesized that mindfulness would moderate the association between burden (objective and subjective) and mental health outcomes such that in people who are more mindful, burden has less of an impact on mental health. This hypothesis was not supported. Thus, while greater mindfulness does appear to be associated with better mental health, being more mindful does not appear to dampen the effect of burden on mental health. Research and clinical implications are discussed.

Public Significance Statement

In this study we found that dementia caregivers who use greater mindfulness in their day to day lives report better mental health. While our findings are correlational and do not necessarily imply causality, they may suggest that public efforts to offer mindfulness workshops/interventions to those tasked with the difficult demands of caring for a loved one with dementia could result in improved psychological well-being for these caregivers.

Keywords: mindfulness, subjective burden, objective burden, dementia, mental health

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There has been a dramatic increase in life expectancy during the last century, due to advances in medicine and other factors (Murphy et al., 2015; Stewart, Cutler, & Rosen, 2013). While this is generally a welcome trend, a challenge of an increased life span is that it is accompanied by an increase in the prevalence of dementia and other age-related disorders. Dementia is an umbrella term used to describe several conditions that develop when nerve cells in the brain no longer function properly or die off (Karel, Gatz, & Smyer, 2012; Thies, Bleiler, & the Alzheimer's Association, 2012). Caring for a family member with dementia is undoubtedly taxing. In fact, prior research suggests that the prevalence of depression for those caring for a person with mental illness is estimated to range from 38% to 70% (Møller, Gudde, Folden, & Linaker, 2009; Winefield & Harvey, 1994). Other common consequences include high degrees of anxiety and caregiver burden (Suro & Weisman de Mamani, 2013; Torrisi et al., 2017).

Caregiver burden has been theorized to contain two discrete components (Hoening & Hamilton, 1966). Objective burden (OB) refers to the stress stemming from visible, concrete costs to caregivers that is the direct result of the mental illness of their family member. Subjective burden (SB) refers to caregivers' appraisals of these costs and the extent to which they perceive their situation to be burdensome. In the current study, we employed Lazarus and Folkman's (1984) stress-appraisal-coping theory as a framework for better understanding the associations between OB, SB, and mental health. According to this model, the symptoms and behaviors associated with a patient's illness and the concrete costs of the illness (e.g., financial strains) are considered to be objective stressors that may result in anguish for the caregiver. In this model, Lazarus and Folkman define stress as a two-way process that involves the production of stressors by the environment, and the response of an individual subjected to these stressors. The model further proposes that more than concrete costs, the subjective interpretation of stressors determines the impact that these stressors will have on mental health.

Research on schizophrenia caregivers has lent some support to Lazarus and Folkman's model. Suro and Weisman de Mamani (2013), for example, found that SB mediated the relationship between OB and mental health outcomes in schizophrenia caregivers. In the context of Lazarus and Folkman's (1984) model, Suro and Weisman de Mamani's findings suggest that further understanding the appraisal processes (SB) around how dementia caregivers perceive their objective stressors may offer insights into factors that could impact their overall mental health. Given that it is easier for therapists to attempt to modify SB (burden appraisals) than to attempt to impact concrete stressors (Suro & Weisman de Mamani, 2013), finding support for this model would have clear clinical implications for working with dementia caregivers.

Pinpointing ways of managing stress that may make one more resilient in the face of caregiver burden is paramount to reducing caregiver distress. A large and growing body of research suggests that mindfulness may be one such tactic. Kabat-Zinn (1994) defines mindfulness as, "paying attention in a particular way; on purpose, in the present moment, and non-judgmentally." Gu et al. (2016) further suggest that mindfulness involves being aware of and accepting internal and external moment-to-moment experiences, and relating to thoughts and emotions in a decentered manner as, "mental events," rather than as accurate reflections of the self and reality.

Some research indicates that interventions aimed at increasing mindfulness strategies are effective in treating depression, anxiety, and a range of other disorders and symptoms (see Shapiro & Carlson, 2017, for a comprehensive review). Specifically, an 8-week mindfulness-based stress reduction program (Brown, Coogle, & Wegelin, 2016), found that mindfulness decreased stress in a sample of dementia caregivers. Similarly, Whitebird et al. (2012) compared a mindfulness-based stress reduction intervention to a community caregiver education and support intervention for family caregivers of people with dementia. The authors found that the mindfulness-based intervention was more effective at improving overall mental health, reducing stress, and decreasing depression, as compared to the community based intervention. Taken together, the research reviewed above indicates that approaches targeting mindfulness are beneficial to mental health, carrying the potential to reduce stress in dementia caregivers. It is unclear, however, whether dementia caregivers who naturally approach life in a more mindful way are better at managing the burden of caregiving in a manner that makes it less impactful on their mental health. It is also unclear whether burden appraisals in dementia caregivers are what drive the link between OB and mental health outcomes.

In the current study, we assess associations among caregiver OB and SB, mindfulness, and mental health (depression, anxiety, and stress, QoL). We test three specific sets of hypotheses. *Hypothesis 1*: Lower levels of burden and greater mindfulness will be associated with better mental health. *Hypothesis 2*: In line with Lazarus and Folkman's (1984) stress-appraisal model, as well as Suro and Weisman de Mamani's (2013) finding in caregivers of people with schizophrenia, SB will partially mediate the relationship between OB and mental health in dementia caregivers. In other words, we expect that subjective appraisals of caregiving will play an intermediary role in the association between concrete costs of caregiving and psychological outcomes in dementia caregivers. *Hypothesis 3*: Mindfulness will moderate the association between burden (OB and SB) and mental health, such that when mindfulness is high, burden is less likely to negatively impact mental health.

Method

Participants

The study sample consisted of 106 dementia caregivers recruited nationwide through Google advertisements, Craigslist Ads, and calls to agencies that service elderly populations. Participants were family members who served as unpaid, live-in caregivers to relatives who were 60 years or older and had received a prior diagnosis of dementia or age-related memory impairment (confirmed through the Dementia Clinical Rating Scale in our study). The relationships between our study participants and the person with dementia were as follows: 55 adult offspring, 19 grandchildren, 15 spouses, 9 nieces/nephews, 6 children in-law, and 2 siblings. Demographic information including caregiver gender, ethnicity, marital status, education, and income are provided in Table 1. Although the current study is primarily focused on caregivers, demographic information on the patients' age, gender, ethnicity, marital status, and education are also provided in Table 2.

Table 1
Caregiver Demographic Information ($n = 106$)

Category	Frequency	Percentage
Gender	Male: 20	18.9%
	Female: 86	81.1%
Ethnicity	White = 57	53.8%
	Black = 30	28.3%
	Hispanic = 7	6.6%
	Asian-American = 2	1.9%
	Other = 10	9.4%
Marital status	Married = 44	41.5%
	Divorced = 21	19.8%
	Single = 34	32.0%
	Separated = 6	5.7%
	Widowed = 1	.9%
Education	Advanced degree = 21	19.8%
	College degree = 41	38.7%
	Some college = 40	37.7%
	High School = 3	2.8%
	Some H.S. = 1	.9%
Annual family income	Less than \$25,000 = 29	27.4%
	\$25,000 - \$50,000 = 31	29.2%
	\$51,000 - \$75,000 = 23	21.7%
	\$75,000 - \$100,000 = 15	14.2%
	\$100,000+ = 7	6.6%
	Declined to report = 1	.9%

Note. Caregiver Age Range = 25–83; $M = 50.73$, $SD = 12.73$.

Caregivers were excluded from the study for the following reasons: They were below age 18, they did not live with the person with dementia, they were a paid, professional caregiver (e.g., nurse or home health aide), they were not fluent in English, or, the person with dementia was younger than age 60. We chose age 60 as our cutoff because the Chapter 825 of the Florida (the author's home state) Statutes defines "elderly" as "a person 60 years of age or older" (see http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0800-0899/0825/0825.html) and this study is focused on understanding caregiving experiences with age-related dementias, as opposed to other forms of dementia (e.g., traumatic brain injury common in younger people).

Procedure

The study was approved by the Institutional Review Board of the authors' home university (see Appendix for verbatim recruiting statement). Interviews were conducted over the phone. Participants were read an IRB-approved consent script, and they provided oral consent if they agreed to participate. When potential participants first made contact with our laboratory, they were screened using the Dementia Clinical Rating Scale (CDR; Morris, 1993) to confirm that they had a family member who met criteria for dementia. If deemed eligible on the CDR, they were then administered the remainder of the instruments. All questionnaires were administered by trained doctoral students or undergraduate research assistants over the phone, who then entered participant responses into a secured computer network file. Each interviewer was trained, tested and certified through the official CDR certification process (see below). Additionally, each interviewer was trained to follow the same protocol, which included reading (verbatim) the consent script, administering the CDR, and then reading each self-report questionnaire (verbatim) to the participant. In total, there were 3

doctoral students and 6 undergraduate research assistants who led the interviews.

Measures

Patient symptom severity, confirmation of dementia diagnosis and assessment of cognitive impairment. The informant component of the Clinical Dementia Rating Scale (CDR; Morris, 1993) was used to confirm that patients met criteria for dementia and to evaluate cognitive impairment in patient functioning. This component of the CDR is a reliable and valid assessment method that has been successfully employed in many dementia studies and is highly correlated with objective measures of cognitive performance on the Mini Mental Status Exam, the Abbreviated Mental Test, and other psychometric tests (Lim, Chin, Lam, Lim, & Sahadevan, 2005; Otoyama, Niina, & Homma, 2000). This semi-structured interview assesses impairment in the domains of Memory, Judgment and Problem Solving, Orientation, Community Affairs, Home and Hobbies, and Personal Care. Five-point ratings are used to assess each area, with 0 indicating "none," 0.5 indicating "questionable," 1 indicating "mild," 2 indicating "moderate," and 3 indicating "severe" (Morris, 1993). To be eligible for the current study, the person with dementia had to meet criteria for a global CDR score of 1 or greater. Study interviewers all fulfilled the requirements for certification as a CDR rater. To do this, they completed an online training and reliability protocol that was developed by John Morris at the Knight Alzheimer's disease Research Center Memory and Aging Project (Morris, 1993). In the current study all coders achieved reliabilities ranging from 83% to 100% agreement with the gold standard raters on six training tapes.

Mindfulness. The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2008) was used to assess mindfulness. The FFMQ is a 39-item scale that assesses the following domains: Observing, Describing, Acting with Awareness, Nonjudging of Inner Experience, and Nonreactivity to Inner Experience. A sample item includes, "I make judgments about whether my thoughts

Table 2
Patient Demographic Information ($n = 106$)

Category	Frequency	Percentage
Gender	Male: 33	31.1%
	Female: 73	68.9%
Ethnicity	White = 58	54.7%
	Black = 30	28.3%
	Hispanic = 8	7.5%
	Asian-American = 3	2.8%
	Other = 7	6.6%
Marital status	Married = 25	23.6%
	Divorced = 14	13.2%
	Single = 11	10.4%
	Widowed = 56	52.8%
	Education	Advanced degree = 10
College degree = 18	17.0%	
Some college = 17	16.0%	
High school = 42	39.6%	
Some H.S. = 10	9.4%	
Grade 8 = 4	3.8%	
Below grade 8 = 4	3.8%	
Missing data = 1	.9%	

Note. Patient Age Range = 60–96; $M = 79.21$, $SD = 8.98$.

are good or bad.” Cronbach’s alpha for this scale in the current study was 0.87.

Burden. Burden was assessed using The Modified Burden Assessment Scale for Families of the Seriously Mentally Ill (BAS; Reinhard, Gubman, Horwitz, & Minsky, 1994). The BAS is a 19-item self-report measure that was designed to assess both objective and subjective burden associated with the experience of caring for a mentally ill family member. On this measure, subjects are asked to indicate on a 4-point Likert scale the extent to which they have experienced burden in each of the 19 areas covered. The OB subscale consists of 10 items assessing the areas of financial strains (e.g., “To what extent have you had financial problems because of your relative’s illness?”), disrupted activities (e.g., “To what extent have you found the household routine was upset because of your relative’s illness?”), and interrupted social functioning (e.g., “To what extent have you had to change your personal plans like taking a new job, or going on vacation because of your relative’s illness?”). The nine items on the SB subscale assess caregivers’ perceived burden (e.g., “To what extent were you upset about how much your relative had changed from his/her former self?”), guilt (e.g., “To what extent have you felt guilt because you felt responsible for causing your relative’s problem?”), and worry about the patient’s future (e.g., “To what extent have you worried about what the future holds for your relative?”). In the current study, the OB subscale demonstrated good reliability with an alpha of 0.88. Similarly, the SB subscale demonstrated good reliability with an alpha of 0.80.

Mental health outcomes. Mental health outcomes were measured as a latent variable, specified by the following four indicators. First, level of depression was rated from the *Beck Depression Inventory* (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). This is a 21-item questionnaire that measures depressive symptoms. Every item consists of four statements graded in severity from 0–3. A total score can range from 0–63 and is calculated by summing the severity ratings of the endorsed statements, which places participants’ depression in the categories of no depression (0–10), mild (11–16), moderate (17–23), or severe (24–63; Beck et al., 1961). In this sample, the BDI demonstrated good reliability with a Cronbach’s alpha of 0.87. The *Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown, & Steer, 1988) was used to assess anxiety symptoms. This scale consists of 21 items, with each item rated in terms of how much the participant has been bothered by the symptom over the past week, using a 4-point scale ranging from 0 to 3. Items are summed to obtain a total score that can range from 0 to 63. The BAI demonstrated excellent reliability with a Cronbach’s alpha of 0.92. The *Depression and Anxiety Stress Scale* (DASS; Lovibond & Lovibond, 1995) was used as a more comprehensive measure of general emotional distress. This 42 item self-report questionnaire is comprised of three factors: depression, anxiety and stress. Examples of items from this scale include, “I felt that life wasn’t worthwhile,” “I found myself getting upset rather easily,” and “I had a feeling of faintness.” The DASS demonstrated excellent reliability with a Cronbach’s alpha value of .97. Finally, caregiver’s quality of life was measured with the *Quality of Life Inventory* (QOLI; Frisch, Cornell, Villanueva, & Retzlaff, 1992). This inventory has 22 items and been shown to be related to other measures of mental health (Frisch et al., 1992). Respondents are asked to rate the perceived importance of several life domains (i.e., health, self-esteem, love, etc.) and their satisfac-

tion with these areas on a 3-point Likert-type scale that ranges from 0 “not important” to 2 “extremely important.” Satisfaction items are assessed on a 6-point Likert-type scale ranging from 0 “very dissatisfied” to 5 “very satisfied.” Total scores were obtained by multiplying the importance and satisfaction rating for each domain and then averaging across scores on all 11 domains. The following is a sample item from this scale: “How satisfied are you with your goals and values?” In the current study, Cronbach’s alpha for the QOLI was 0.86.

Statistical Analyses

Analyses were conducted using Mplus version 7.4 (Muthén & Muthén, 2010). Primary variables were first examined for normality by assessing their skew and kurtosis. Skewness values between -1 and 1 and kurtosis values between -2 and 2 were considered acceptable (Bulmer, 2012; Joanes & Gill, 1998).

Before performing further analyses, we statistically aggregated mental health outcomes, because we were interested in caregiver mental health overall rather than any specific mental health symptoms. To that end, we created a mental health outcome latent variable. Model fit statistics were examined to test whether the latent variable used as the outcome variable for mental health well-being (containing the DASS, BDI, BAI, and the QOLI) was a stable statistical model and had acceptable model fit. To determine model fit, Kline’s criteria (Kline, 2011) were used, which require examining the Chi-Square test of model fit, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR).

Following the test of model fit, we examined whether potential demographic covariates (age, gender, and ethnicity) were related to our mental health latent. Because greater patient symptom severity is likely to be associated with greater caregiver burden and poorer mental health outcomes, we also examined this variable as a potential covariate on theoretical grounds. Correlations between the well-being latent and symptom severity, age, and gender (dummy coded) were conducted. The well-being latent variable was also regressed on ethnicity, which was dummy coded.

To test the first set of hypotheses, we examined the zero-order associations between burden (both objective and subjective), mindfulness, and mental health. We examined the associations with each mental health indicator separately as well as assessing their links to the global mental health latent. We used correlation coefficients to assess the relationship between variables (burden and mindfulness) and specific indicators of mental health (e.g., depression, anxiety, QoL), and regression analyses to test the relationship between variables and the mental health latent. To test the second hypothesis, the indirect effect of objective burden on mental health outcomes via subjective burden was examined. This was done by first regressing the mental health latent on the burden variables, and also regressing subjective burden on objective burden. The significance of the indirect effect of objective burden on mental health outcomes via subjective burden was calculated through bootstrapped mediation (with 5000 bootstrapped samplings). Finally, to test the third hypothesis a moderation analysis was conducted. Caregiver burden and mindfulness were centered, and the interaction term was created using the cross-product of these two variables. The moderation model examined the main effects of the caregiver burden and mindfulness, as well as the

effect of the interaction term on mental health outcomes. The magnitude of the effects are presented in the results section, and are based on Cohen's standards for correlational and regression analyses (Cohen, 1992).

Results

Preliminary Analyses

Missing data and normality. Missing data was minimal in this study. Across all participants and measures, there was a total of only 20 missing items. To test whether data were missing at random, Little's Missing Completely At Random (MCAR) test was used. This test supported the presence of data missing completely at random, ($\chi^2(1463) = 230.85, p = 1.00$). Thus, the default in Mplus for missing data was used. The default assumes that data are missing at random and includes all available data in the estimation process using a model-based algorithm (Muthén & Muthén, 2010).

Normality. The BAI was kurtotic. A square root transformation was used, which adjusted the BAI's kurtosis value to within normal limits. The skew and kurtosis statistics of all other variables were found to be within normal limits. Thus, no other transformations were necessary.

Model fit. A confirmatory factor analysis was conducted to determine the model fit of the mental health latent variable with four indicators (DASS, BDI, BAI, and QOLI). The model had good fit: $\chi^2(2) = 1.61, p = .45, CFI = 1.00, RMSEA = 0.00, SRMR = 0.01$. Furthermore, all of the standardized regression coefficients of the indicators significantly loaded onto the latent (all p 's < .001). The DASS had a standardized factor loading of .90, the BDI had a standardized factor loading of .74, the BAI had a standardized factor loading of .80, and the QOLI had a standardized factor loading of -.66. Therefore, this latent variable was retained for all subsequent analyses.

Covariates. The relationship between potential demographic covariates (including caregiver's relationship to patient, education level, income, patient symptom severity, as well as caregiver and patient age, ethnicity, and sex) and mental health was examined next. Patient symptom severity negatively related, $r = -.27, p = .005$ and caregiver age positively related, $r = .20, p = .042$ to mental health outcomes, so we controlled for these variables in all

primary analyses. No other demographic variables related to mental health outcomes.

Primary Results

The first set of hypotheses was largely supported: Greater burden was found to be associated with poorer mental health, and greater mindfulness was associated with greater mental health on every indicator (see Table 3). Additionally, the zero-order association between burden and the mental health latent was significant and large in magnitude ($\beta = .75, p < .001$), as was the zero-order association between mindfulness and the mental health outcomes latent ($\beta = -.44, p < .001$).

To assess hypothesis 2, the indirect effect of OB on mental health via SB was examined. The direct path between OB and mental health was found to be significant and medium in magnitude ($\beta = .28, p = .005, 95\% \text{ CI } [.08, .47]$). OB was also found to be significantly related to SB ($\beta = .62, p < .001, 95\% \text{ CI } [.50, .75]$), and SB was significantly related to mental health outcomes ($\beta = .49, p < .001, 95\% \text{ CI } [.29, .69]$), with both relationships being large in magnitude. Finally, a significant indirect effect of medium size was found from OB to mental health via SB ($\beta = .31, p < .001, 95\% \text{ CI } [.17, .45]$). Thus, hypothesis 2, was supported (see Figure 1).

Hypothesis 3 was not supported: Mindfulness did not moderate the relationship between burden and mental health outcomes ($\beta = -0.01, p = .89, 95\% \text{ CI } [-.15, .13]$). However, as also suggested above under the results testing hypothesis 1, there was a significant and medium negative main effect of mindfulness on mental health ($\beta = -.27, p < .001, 95\% \text{ CI } [-.41, -.13]$). There was also a significant and large positive effect of burden on mental health outcomes ($\beta = .66, p < .001, 95\% \text{ CI } [.54, .78]$).

Discussion

The current study was aimed at examining factors associated with mental health in caregivers of individuals with dementia. This is a timely topic, as the incidence of Alzheimer's and related dementias are greatly on the rise and expected to increase from 11 million to 16 million cases by 2050 (Alzheimer's Association, 2015). Further, caregiving takes a major emotional toll on family members tasked with caring for their mentally ill relative (Suro &

Table 3
Correlations of Primary Study Variables

Measures	1	2	3	4	5	6	7
1. DASS	—						
2. BDI	.67***	—					
3. BAI	.74***	.49***	—				
4. QOLI	-.58***	-.49***	-.49***	—			
5. MBAS_Obj	.55***	.49***	.41***	-.54***	—		
6. MBAS_Subj	.64***	.59***	.50***	-.41***	.63***	—	
7. FFMQ	-.38***	-.23*	-.35***	.40***	-.17	-.20*	—

Note. DASS = Depression and Anxiety Stress Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; QOLI = Quality of Life Inventory; MBAS_Obj = Modified Burden Assessment Scale (Objective Burden Subscale); MBAS_Subj = Modified Burden Assessment Scale (Subjective Burden Subscale); FFMQ = Five Facet Mindfulness Questionnaire.

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

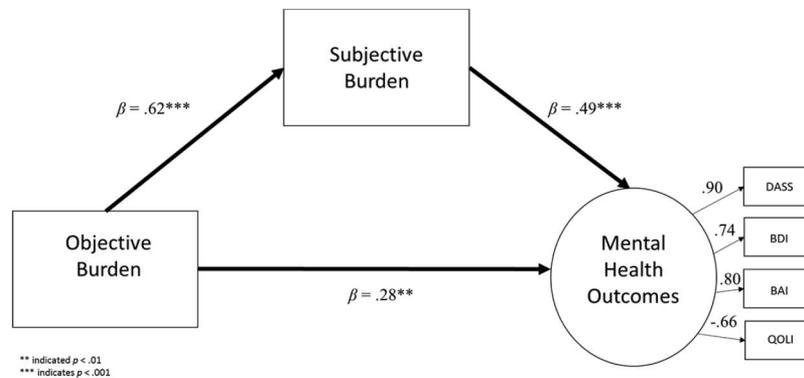


Figure 1. Model examining the indirect effect of OB on mental health via SB. DASS= Depression and Anxiety Stress Scale, BDI=Beck Depression Inventory, BAI= Beck Anxiety Inventory, QOLI= Quality of Life Inventory.

Weisman de Mamani, 2013; Torrisi et al., 2017). The demands are both concrete (e.g., disrupted activities) and emotional (e.g., exhaustion). Consequently, pinpointing factors that may make caregivers more resilient, despite their caregiving demands, is critical.

As hypothesized, and not surprisingly, in this study we found that caregivers who experienced more OB and SB reported a higher degree of depression, anxiety, and stress, and a lower overall quality of life. This confirms prior research demonstrating the psychological toll that burden places on relatives and other loved ones who look after a mentally ill person (e.g., Barrowclough, Johnston, & Tarrier, 1994; Fredman, Daly, & Lazur, 1995; Oldridge & Hughes, 1992; Suro & Weisman de Mamani, 2013; Torrisi et al., 2017; Winefield & Harvey, 1993). These findings suggest that efforts to reduce caregiver burden may help alleviate the negative overall mental health toll that dementia caregivers often experience.

Similarly, and in line with expectations, those who reported utilizing more mindfulness-based approaches also experienced lower rates of depression, anxiety, and stress, as well as a better QoL. Our findings are in line with growing evidence that mindfulness based approaches can result in better mental health for people suffering from a range of disorders and issues (see Shapiro & Carlson, 2017 for a review). Our findings are also consistent with research conducted by Brown et al. (2016), which indicated that a mindfulness based treatment reduced stress in dementia caregivers, as well as work done by Whitebird et al. (2012), which indicated that mindfulness can improve overall mental health and decrease depression in caregivers of individuals with dementia.

Our results further supported a stress-appraisal-coping model developed by Lazarus and Folkman (1984). Specifically, in this study we found that SB partially mediated the association between OB and mental health. In line with Lazarus and Folkman's (1984) model, our results indicate that objective stressors may stimulate an appraisal process in dementia caregivers such that external stressors are estimated to be either burdensome or not. In turn, mental health will be impacted differently according to these appraisals. Our finding that SB partially mediates mental health outcomes demonstrates the potential for psychological outcomes to be improved by addressing caregivers' appraisals of their caregiving experience. This finding is important, as SB is likely more

amenable to therapeutic interventions than is OB. In other words, therapists are likely restricted in how much they can assist their clients in overcoming the financial, social, or time constraints associated with caregiving. On the other hand, there are many fewer constraints around helping clients to mold their appraisals in a more adaptive manner in therapy. Hence targeting SB may be the most straightforward route to improving mental health in dementia caregivers. It is important to note that our finding that SB underlies the link between OB and mental health replicates an earlier study by Suro and Weisman de Mamani (2013). Thus, this may be a robust association that extends to caregivers of any serious mental (and possibly physical) disorder.

We did not find support for our hypothesis that mindfulness would moderate the link between caregiver burden and mental health. This is surprising; especially in light of prior research indicating that mindfulness practices result in improvements in mental health (e.g., Shapiro & Carlson, 2017). While our results do not show that mindfulness benefits mental health through reducing the toll that caregiver burden takes on psychological functioning, they instead suggest that mindfulness approaches may benefit psychological functioning in a more straightforward way, by directly soothing anxiety and stress and lowering depression. This point merits further investigation.

Study Limitation's, Conclusions, and Future Directions

This study is marked by several limitations, including a cross sectional design and self-report data. Without longitudinal data, conclusive causal conclusions cannot be drawn. Future studies are needed that examine the influences of OB and SB on mental health over time. Additionally, while self-report data can be helpful in capturing participants' inner experiences, it has drawbacks in that gaining accurate data is dependent on clients answering questions honestly and having accurate insight into their mental health issues and experiences. Future studies in dementia caregiving would benefit from also assessing burden and mental health constructs using more objective methods (e.g., structured clinical interviews and/or collecting data on caregivers from the perspective of a spouse or other family member). The heterogeneity of the care-

giver sample is another limitation of the current study. While we did not find differences between caregivers' relationship to patients and any of the study variables, it is possible that there are differences in caregiver outcomes based on a caregiver's relationship to the patient. Future studies should more closely examine whether the type of caregiver relationship affects caregiver outcomes.

In conclusion, we found that lower levels of burden were associated with better mental health in dementia caregivers. We further found that SB indirectly impacted the relationship between OB and mental health outcomes in dementia caregivers. This finding has implications for psychological interventions with dementia caregivers. Our study findings suggest that therapists may help to mitigate mental health outcomes in dementia caregivers by targeting the more malleable subjective burdens associated with taking care of a loved one with dementia. To achieve this, clinicians may assist caregivers in developing awareness of their subjective interpretations of the "burdens" associated with caregiving and the ways that these perceptions may be altered in a manner that could ultimately improve their mental health. For example, if a client reports that, "I adore my mother but feel imprisoned and trapped by the burdens of bathing, dressing, and grooming a grown woman" a clinician may work to help the client interpret the caregiving experience in a more adaptive way (e.g., "I have the opportunity to reciprocate care and support for someone who I love and who cared for me in this manner for many years").

Study results also indicated that higher levels of mindfulness were associated with better mental health outcomes in dementia caregivers. Although we did not examine approaches to mindfulness in this study, our findings underscore the potential benefits of tapping in to available evidenced based mindfulness approaches and continuing to develop new interventions explicitly designed to assist caregivers coping with dementia. Existing approaches including Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2012) and those discussed earlier (e.g., Brown et al., 2016) help people who suffer from depression or other mental health symptoms become more aware of how their mind works without passing judgment. Mindfulness-based approaches also commonly deliver mindfulness meditation, whereby a practitioner may guide clients to direct their focus onto the present moment. If participants become aware that their thoughts are drifting away from the present, they are encouraged to take notice of where they are and what they are doing before bringing their attention back to the present moment, without reacting or judging themselves (Kabat-Zinn, 1994). Approaches like these are likely to aid dementia caregivers in reframing their burden and/or directing their attention away from this burden during inopportune times, which ultimately could improve mental health. Finally, in this study, mindfulness was not found to moderate the association between burden and mental health. In future research, it will therefore be important to tease apart the specific pathways and mechanisms by which mindfulness works to impact mental health.

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Appendix

Research Study for Caregivers of Individuals With Dementia (National)

Do you care for a relative with dementia? If so, you may be eligible to participate in a national telephone survey conducted by the University of Miami.

To qualify, you must:

- Have a relative who is *60 years or older* with dementia or age-related memory impairment

- Be a *live-in, unpaid caregiver* for this family member

- Have a working telephone number

(Other criteria may apply)

What you can expect during the study as a participant:

- You must successfully complete a telephone-based screening interview before enrollment in the study

- If enrolled, you will participate in a *one-time* telephone survey, which may last up to *2 1/2 hours*

- Upon successful completion of the survey, you will be compensated with *\$40* (Cash will be mailed directly to participants)

Received May 11, 2017

Revision received November 27, 2017

Accepted December 21, 2017 ■