Published in final edited form as:

Psychol Aging. 2011 September ; 26(3): 584–591. doi:10.1037/a0022263.

Depression and Quality of Informal Care: A Longitudinal Investigation of Caregiving Stressors

G. Rush Smith,

Department of Psychology, University of Georgia

Gail M. Williamson,

Department of Psychology, University of Georgia

L. Stephen Miller, and

Department of Psychology, University of Georgia

Richard Schulz

Center for Social and Urban Research, University of Pittsburgh

Abstract

This research examined longitudinal associations between caregiving stressors, caregiver depression, and quality of care. Informal caregivers of elderly care recipients were interviewed at baseline ($N = 310$) and again one year later ($N = 213$). Hierarchical regression analyses indicated that increases in caregiving stressors (i.e., caregiver physical health symptoms, caregiver activity restriction, and care recipient controlling and manipulative behavior) were related to increased caregiver depression. In turn, increased caregiver depression and decreased caregiver respectful behavior predicted increases in potentially harmful behavior. These results extend previous cross-sectional findings and indicate that changes in caregiving stressors, caregiver depression, and caregiver respect over time may signal that intervention is warranted in order to forestall or prevent poor quality of care.

Keywords

caregiving; depression; elder abuse and neglect; quality of informal care

As research on the impact of providing care to a frail or disabled family member has become more sophisticated, numerous factors have emerged as predictors of caregiving outcomes, painting an increasingly complex picture of the caregiving experience. Acknowledging the accumulated cross-sectional and longitudinal evidence that informal caregivers are subject to negative health effects, both psychological and physical, our primary goal was directed toward answering the question of how these effects may influence the quality of care informal caregivers provide.

On average, caregivers exhibit more symptoms of depression than their non-caregiving peers (e.g., Bookwala, Yee, & Schulz, 2000; Pinquart & Sörensen, 2005, 2007), and caregiver depression is related to providing care that is lower in quality (e.g., Cooney, Howard, & Lawlor, 2006; Godkin, Wolf, & Pillemer, 1989; Steinmetz, 1988; Wolf, 1988). Depressed caregivers are more likely to engage in potentially harmful behavior (PHB; e.g., screaming, handling the elder roughly, threatening with nursing home placement; Beach et

al., 2005; Miller et al., 2006; Williamson, Shaffer, & The Family Relationships in Late Life Project [FRILL], 2001) and less likely to provide aspects of high quality care, such as not treating the elder like a child and taking the time to sit and talk with the elder (Christie et al., 2009; Dooley, Shaffer, Lance, & Williamson, 2007).

The impact of caregiver depressive symptoms on quality of care is further complicated by the association between physical health problems and depression. Poor physical health has consistently been associated with more symptoms of depression (e.g., Williamson, Shaffer, & Parmelee, 2000), and declines in self-rated health status forecast increases in depressive symptoms (Kosloski, Stull, Kercher, & Van Dussen, 2005; Pruchno, Wilson-Genderson, & Cartwright, 2009). Being a caregiver can be detrimental to physical health (e.g., Pinquart & Sörensen, 2003; Vitaliano, Zhang, & Scanlan, 2003) but exactly how caregiver physical health is related to quality of care remains unknown. Thus, we specified a basic model in which declines in caregiver physical health may result in increases in symptoms of depression that, in turn, lead to lower quality of care.

To this model, we added two caregiving stressors that have emerged in recent cross-sectional research as important correlates of caregiver depression. The first of these is the extent to which caregivers perceive that their routine activities are restricted by providing care (Williamson & Shaffer, 2000). In numerous studies, activity restriction has been shown to be a powerful predictor of depressive symptoms, in fact, mediating the impact of various forms of stress on depression (e.g., Benyamini & Lomranz, 2004; Mausbach, Patterson, & Grant, 2008; Walters & Williamson, 1999; Williamson & Schulz, 1992a, 1992b; Williamson, Schulz, Bridges, & Behan, 1994; Williamson, Shaffer, & Schulz, 1998). In other words, the extent to which stress predicts symptoms of depression depends on how much a stressor inhibits normal activities. However, to date, with one exception (Nieboer et al., 1998), all of the activity restriction studies have been cross-sectional in design. Thus, we were interested in demonstrating that as activity restriction increased over time, so would caregiver depressive symptoms – and by extension, so would quality of care decline.

Another caregiving stressor of particular interest was controlling and manipulative behavior on the part of the care recipient. Caregivers are distressed when their care recipients behave in ways that make providing care more onerous (e.g., Hooker, Monahan, Bowman, Frazier, & Shifren, 1998; Schulz, O'Brien, Bookwala, & Fleissner, 1995). The research in this area primarily has focused on the problematic types of behavior exhibited by Alzheimer's patients (e.g., wandering, hallucinations, repetitive questioning, inappropriate social actions), and findings reveal that caregivers are more bothered by these kinds of behavior than they are by the amount of care they must provide (e.g., Pinquart & Sörensen, 2004). However, care recipients can behave in other ways that also upset their caregivers. That is, when caregivers frequently are subjected to controlling and manipulative care recipient behavior (e.g., causing trouble between family members, acting like a martyr, invading caregiver's privacy), they resent both the care recipient and their caregiving role, largely because they attribute these kinds of behavior to something about the care recipient's personality rather than to their illness (Williamson et al., 2005). Again, however, these findings are from cross-sectional data. Our expectation was that when caregiver reports of controlling and manipulative behavior increased over time, so would caregiver symptoms of depression with a concomitant decrease in quality of care.

Finally, we incorporated recent evidence that quality of care is multidimensional (Christie et al., 2009) into our analyses. Although high quality, exemplary care and PHB are negatively related, the association is only in the moderate range. Moreover, PHB and exemplary care are differentially associated with adequacy of care and a number of psychosocial variables, providing further evidence for the distinction between measures of quality of care. These

results suggested that declines in respectful care might serve as an early warning signal of the onset of PHB.

Consistent with previous research, we expected that when caregiver physical health declined, caregiver symptoms of depression would increase, with a concomitant increase in PHB. Similarly, we predicted that caregivers would report increases in depression when their routine activities were increasingly restricted and when care recipients evidenced increases in controlling/manipulative behavior. Finally, we investigated longitudinal associations between PHB and high quality, or respectful, care speculating that declines in respect for the elder's psychological needs might forecast increases in PHB. Several demographic variables (caregiver age, gender, education, race, kinship, living arrangements, and care recipient age, gender, and dementia status) may be associated with our variables of interest. However, there are no theoretical or empirical reasons to suspect that any demographic factors make a difference in the *associations* between our variables of interest. Therefore, in order to more clearly specify relations between caregiving stressors, depression, and quality of care independent of sociodemographic variables, we statistically controlled for the effects of these variables when appropriate.

Method

Procedure and Sample

Data were gathered during the first two waves (at one-year intervals) of the Family Relationships in Late Life (FRILL) project, a longitudinal study conducted in the Athens, GA, Pittsburgh, PA, and Dallas, TX areas. The FRILL study was approved by the Institutional Review Boards of the University of Georgia, the University of Pittsburgh, and the University of Texas Southwestern Medical Center at Dallas.

Elderly care recipients and family caregivers were identified through area agencies on aging, university services and departments, targeted mailing lists, and media. Interested participants were screened for eligibility by phone; eligible caregivers were family members or friends who provided unpaid assistance with at least one basic activity of daily living (e.g., bathing, toileting) or two instrumental activities of daily living (e.g., paying bills, handling financial matters) to community-residing persons over the age of 60.

Carefully trained interviewers conducted structured, face-to-face interviews with caregivers most often in respondents' homes. Caregivers were paid \$20 for each completed interview. Following the initial interview at Time 1 (T1), these interviews were repeated at Time 2 (T2; one year after T1).

Three hundred ten caregivers provided data at T1. On average, they were 63.1 years old ($SD = 14.3$, range 20 – 100), had some college or trade school education, had a median household income of \$25,000 to \$30,000 (range <\$5,000 –>\$40,000), and had been providing care for 6.1 years ($SD = 6.8$). In terms of kinship, 54% were caring for a spouse, 39% were caring for a parent, and 7% were caring for a sibling, other relative, or friend; 77% of caregivers were women. Most respondents (79%) were White (of the remainder, 17% were African American, 4% were Hispanic or another ethnicity). On average, care recipients were 77.9 years old ($SD = 8.7$), and were receiving help from their caregivers with 10.5 activities of daily living ($SD = 4.4$). Approximately three-fourths (75.2%) of care recipients were living with the caregiver, and 41% were reported to have been diagnosed with dementia.

Measures

Caregiver physical symptoms—The Physical Symptoms Checklist (PSC) was developed specifically for quantitative analysis of physical symptomatology (Cameron, Leventhal, & Leventhal, 1993; 1995). This 44-item instrument covers a wide range of physical conditions. Participants indicate the extent to which they experienced each symptom in the last week (0 = *no*, 3 = *yes, severe*). Responses were summed to yield a single score that reflected overall severity of physical symptoms.

Controlling and manipulative behavior (CMB)—Caregiver reports of care recipient CMB were assessed using a 7-item adaptation of the Steinmetz Control Scale (Steinmetz, 1988). Caregivers rated how often (0 = *never*, 4 = *always*) their care recipients employed behavioral tactics “that people sometimes use in attempts to control things or get their own way” (e.g., “Care recipient pouts/withdraws to room,” “Care recipient manipulates family members,” “Care recipient uses illness to gain control”). Consistent with previous research (Williamson et al., 2005), internal reliability was high, Cronbach’s alpha = .88 at T1 and .87 at T2.

Amount of caregiving assistance provided—The amount of assistance caregivers provided was measured using an 18-item (e.g., personal grooming, taking care of personal business) assessment adapted from the ADL instrument (Duke University, Older American Resources & Services, 1978). To avoid confounding ADL tasks that care recipients have never performed (e.g., some older women have never filed tax returns, some older men have never done laundry) with tasks that caregivers do not help with (either because help is not needed or because someone else helps), caregivers evaluated each ADL item on a scale of 0 (*care recipient never did this*) and 1 (*I do not help with this*) to 5 (*complete help, I do this for him/her all the time*). Anecdotal evidence gleaned from interviews with hundreds of caregivers over multiple studies indicated that differentiating between whether care recipients never conducted a particular activity and whether caregivers do not help with that activity would result in less respondent confusion about the appropriate answer and, consequently, more complete and accurate data. Responses were summed to yield a measure of amount of assistance provided, with a possible range of 0 – 90 on the 18-item measure. Mean ADL score was 49.1 (SD = 18.0). This instrument has shown good internal reliability in previous studies (e.g., Williamson et al., 2005), and Cronbach’s alpha for the present study was .90 at T1 and .91 at T2.

Caregiver activity restriction—The Activity Restriction Scale (ARS; Williamson & Schulz, 1992a) asked caregivers to indicate the extent to which their own activities (e.g., doing household chores, going shopping, visiting friends, participating in sports and recreation, maintaining friendships) were restricted by caregiving responsibilities (0 = *never or seldom*, 4 = *greatly*). Prior research has shown the ARS to be internally consistent (e.g., Williamson & Shaffer, 2000; Williamson & Schulz, 1992a, 1992b; Williamson, Schulz, Bridges, & Behan, 1994; Williamson, Shaffer, & Schulz, 1998). Cronbach’s alpha for the present study was .88 at T1 and .90 at T2.

Caregiver depressive symptoms—Symptoms of depression were measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), a 20-item self-report instrument for use in the general population. The CES-D has high internal consistency, test-retest reliability, and validity (e.g., Hertzog, VanAlstine, Usala, Hultsch, & Dixon, 1990; Radloff, 1977) and has been used successfully in studies of physically impaired elderly patients (e.g., Schulz, Williamson, & Bridges, 1991; Williamson & Schulz, 1992a, 1992b) and their caregivers (e.g., Williamson & Schulz, 1990, 1995). Cronbach’s alpha for the present study was .91 at both T1 and T2.

Caregiver-provided respectful care—The 7-item Respect subscale of the Exemplary Care Scale (ECS; Dooley et al., 2007) assessed consideration for care recipient feelings, wishes, opinions, and values (e.g., “I do everything I can to avoid making [care recipient] feel that he/she is a burden to me,” “I actively avoid treating [care recipient] like a child,” “I take the time to sit and talk with [care recipient],” “I really try to avoid interrupting [care recipient] when he/she is talking”). Frequency of each behavior was assessed on a 4-point scale (1 = *never*, 4 = *always*), and Cronbach’s alpha was .77 at both T1 and T2.

Potentially harmful behavior (PHB)—Due to the voluntary nature of our sample, we did not expect to identify dyads in which caregivers were guilty of severe forms of abuse and neglect. Rather, we assessed potentially harmful behavior (PHB; e.g., Beach et al., 2005; Dooley et al., 2007; Miller et al., 2006; Shaffer, Dooley, & Williamson, 2007; Williamson et al., 2001) – that is, care that is less than optimal but not so inadequate or abusive that social or legal intervention is required. PHB was measured using a 10-item instrument developed from the original Conflict Tactics Scale (Straus, 1979), work by Steinmetz (1988) and Pillemer and Suito (1992), and our own analyses of the elder abuse and neglect literature. The resulting instrument has adequate psychometric properties (e.g., Williamson et al., 2001), and is comprised of five indicators of psychological mistreatment (e.g., caregiver screams and yells at care recipient) and five indicators of physical mistreatment (e.g., caregiver hits, slaps, or handles care recipient roughly).

Because of their sensitive nature, these questions were placed near the end of our structured interview with instructions carefully worded to decrease reactance. Specifically, caregivers were asked to rate how frequently (0 = *never*, 4 = *all the time*) they employed “methods that caregivers use when elderly people won’t follow their doctor’s orders or when they won’t do what their caregivers feel they should do.” Responses were summed to create a measure with higher scores representing more frequent PHB.

Consistent with findings of population-based studies (Cooper et al., 2009; Laumann, Leitsch, & Waite, 2008), PHB was, on average, infrequent in this sample but, similar to other studies, there was considerable variability (T1 $M = 1.6$, $SD = 2.2$; T2 $M = 1.8$, $SD = 2.4$). In these types of studies, aggregate measures can be misleading; the data are, by nature, skewed. For example, in the present sample at T1, 41.6% of caregivers reported at least occasionally using psychological PHB (e.g., screaming and yelling) whereas 4.2% reported at least occasionally using physical PHB (e.g., handling the elder roughly). At T2, 43.8% of caregivers reported screaming and yelling at care recipients, and 5.6% of caregivers reported handling the elder roughly. Cronbach’s alpha for the 10-item scale was .67 at T1 and .61 at T2.

Results

Sample Attrition

Almost one-third (31.3%, $n = 97$) of caregivers did not complete T2 interviews. Of these, 4 (1.3%) died prior to the T2 interview, and 29 (9.4%) were no longer providing care due to the death of their care recipient. Some caregivers had relinquished the caregiving role to someone else (1.9%, $n = 6$) or their care recipient had been institutionalized (3.9%, $n = 12$). Finally, 35 (11.3%) withdrew from the study, and 11 (3.5%) could not be located for T2 interviews. Multivariate analysis of variance (MANOVAs) compared caregivers who completed both interviews ($n = 213$) to those who completed only T1 interviews ($n = 97$) on all variables in the study (including demographic factors). These analyses revealed three statistically significant differences. That is, caregivers who did not complete T2 interviews were less educated, $F(1, 308) = 6.09$, $p = .01$, reported more symptoms of depression on the CES-D, $F(1, 308) = 6.47$, $p = .01$ ($M = 14.4$, $SD = 11.5$ for the attrited sample and $M = 12.1$,

$SD = 10.8$ for the full sample), and were caring for older care recipients $F(1,308) = 6.27, p = .01$ ($M = 79.8, SD = 9.5$ for the attrited sample and $M = 77.9, SD = 8.7$ for the full sample). These two groups did not differ in care recipient gender or dementia status, nor did they differ according to caregiver gender, age, race, kinship, living arrangements, physical symptoms, amount of help provided, activity restriction, CMB, respect, or PHB, all $F_s \leq 3.48, ns$.

Bivariate Correlations

Zero order correlations determined associations between caregiver demographic variables (age, gender, education, race, kinship, living arrangements) and care recipient gender, age, and dementia status at T1 and all study variables at T1 and T2 (see Table 1). Due to the large number of analyses conducted, to adjust for Type I error, we considered only correlations at $p < .01$ or better to be meaningful. As shown in Table 1, caregiver education, kinship, living arrangements, and care recipient gender and dementia status were associated with our variables of interest at T1 and T2 (all other $r_s \leq .16, ns$). We controlled for these variables in subsequent multivariate analyses.

Also shown in Table 1 are bivariate analyses examining cross-sectional (i.e., within T1 and within T2) and T1 – T2 relations among study variables. Results were consistent with our predictions. That is, within each measurement time, higher levels of physical symptoms, CMB, amount of assistance provided, and activity restriction were associated with more depressive symptomatology in caregivers. Similar relations were found among the across-time correlations (see Table 1).

As predicted, caregivers who were more depressed provided less respectful care and reported more PHB at T1, T2, and across times. Finally, caregivers who exhibited less Respect reported more instances of PHB.

Depression

In each of a series of hierarchical regressions, caregiver education, kinship, living arrangements, and care recipient gender and dementia status were entered as control variables. Then, in the first step, each relevant T1 variable was entered (including the T1 measurement of the variable being predicted). In the second step, T2 measurements of each predictor variable from step one were entered. Thus, significant beta weights in step two of the regressions can be interpreted as *change* in predictor variable values predicting *change* in the criterion variable.

As shown in Table 2, the strongest predictor of depression at T2 was depression at T1. However, consistent with hypotheses, increases in caregiver physical symptoms, caregiver reports of CMB, and caregiver activity restriction emerged as significant predictors of increased depression, and the overall model accounted for 58% of the variance in caregiver depression at T2. Change in the amount of care provided did not predict change in caregiver depression between T1 and T2.

Quality of Care

We did not find evidence that caregivers showing an increase in depressive symptomatology over time would evidence decreases in respectful care. As shown in Table 3, after controlling for T1 measurements of Respect and depressive symptoms in the first step, we entered T2 depressive symptoms as a predictor of T2 Respect. Step one of the model was significant and accounted for 58% of the variance. Step two of the model did not explain additional variance in T2 Respect. In other words, change in depression did not predict change in Respect.

We also investigated whether changes in depression were related to changes in PHB. As shown in Table 4, caregivers reporting increases in depressive symptoms reported increases in PHB. Table 4 also shows that, consistent with our hypotheses, decrease over time in respectful care was related to more frequent PHB.

Although we did not make specific predictions about whether depression would mediate the association between caregiver physical health and PHB, we tested this possibility in additional exploratory analyses. According to Baron and Kenny (1986), the following conditions are necessary to establish mediation: a) the predictor must be related to the outcome; b) the predictor must be related to the mediator; c) when both the predictor and the mediator are entered into the equation, the association between the mediator and the outcome must remain significant, whereas d) the effect of the predictor on the outcome must decline or become nonsignificant. As in previous analyses, we controlled for demographic variables (i.e., caregiver education, kinship, living arrangements, and care recipient gender and dementia status) and tested for mediation at both T1 and T2.

Results indicated that all conditions for establishing mediation were met at both measurement points. First, caregivers in worse physical health engaged in increased PHB (T1 $\beta = .23, p < .001$; T2 $\beta = .17, p = .01$). Second, caregivers suffering from increased physical symptoms experienced increased symptoms of depression (T1 $\beta = .45, p < .001$; T2 $\beta = .39, p < .001$). Finally, when PHB was regressed onto physical health and depression, the association between depressive symptoms and PHB remained significant (T1 $\beta = .31, p < .001$; T2 $\beta = .28, p < .001$), whereas caregiver physical symptoms became nonsignificant (T1 $\beta = .09, p = .13$; T2 $\beta = .06, p = .39$).

In a more direct assessment of the indirect effect of physical health on PHB through symptoms of depression, we used the bootstrapping technique recommended by Preacher and Hayes (2008) that allows for the addition of statistical controls. The test does not assume a normal distribution of indirect effect sizes (Mackinnon, Lockwood, & Williams, 2004). Using 1,000 bootstrapped samples, the test of the indirect effect was significant at T1 (mediated effect = .03, $SE = .01$, 95% CI = .01 – .04) and T2 (mediated effect = .02, $SE = .01$, 95% CI = .01 – .04) since the confidence intervals do not include zero. These results indicate that poorer caregiver physical health predicts more PHB largely to the extent that decrements in caregiver physical health lead to increased depression.

Discussion

The results of these analyses indicate that declining caregiver mental and physical health are related to the quality of care informal caregivers provide. Drawing on previous research, we constructed a longitudinal model and tested the extent to which several previously identified stressors (poorer caregiver physical health, more care recipient manipulative and controlling behavior, and more caregiver restriction of normal activities as a result of providing care) predicted caregiver depression over time. We then extended our model to investigate how the hypothesized increases in caregiver depression might predict declines in quality of care.

In terms of the predictors of caregiver depressive symptoms, our results are consistent with the well-established association between poor physical health and increased depression (e.g., Pinquart & Sörensen, 2003; Vitaliano, Zhang, & Scanlan, 2003; Williamson, Shaffer, & Parmelee, 2000). We also found that when caregivers perceived that their care recipients had become more controlling and manipulative in their behavior, caregiver depressive symptoms increased. In addition, as we expected, when caregivers became less able to go about their routine activities, they became more depressed. These three variables (caregiver physical

symptoms, care recipient controlling/manipulative behavior, and caregiver activity restriction) independently explained variance in caregiver depression over time.

Having established that changes in our hypothesized predisposing factors were related to changes in caregiver depression, we then turned to showing that escalating caregiver depressive symptoms predicted quality of care. As prior retrospective and cross-sectional research suggested (e.g., Cooney et al., 2006; Godkin et al., 1989; Miller et al., 2006; Williamson et al. 2001), in our longitudinal analyses, when caregivers became more depressed, the frequency of caregiver-reported potentially harmful behavior (e.g., screaming and yelling, threatening with nursing home placement) toward their care recipients increased.

Changes in caregiver depression were not related to changes in the extent to which caregivers reported respectful care (e.g., considering care recipient feelings, wishes, opinions, and values). However, as predicted, when respectful care declined, potentially harmful behavior increased, an effect that persisted after controlling for changes in caregiver depression. These data did not allow us to determine the factors that are involved in declining respectful care. Additional research will be required to identify processes that lead to decrements in respectful care over time.

Several aspects of this study warrant caution when interpreting our results. First, although the data are longitudinal, they still are correlational. Thus, we cannot say with certainty that changes in caregiving stressors *cause* changes in symptoms of depression that, in turn, *cause* decreases in quality of care. Larger scale studies with at least three waves of data would help address these issues, enabling latent growth modeling analyses. Even more definitive would be experimental research in which PHB is assessed before and after interventions that specifically target caregiver depression, activity restriction, and/or respectful care.

A second limitation is the nature of our sample. Although we recruited from multiple sources at three geographically diverse sites, we do not propose that this sample represents the entire population of caregivers of elder adults. On the other hand, there are, to our knowledge, no theoretical or empirical reasons to expect that the basic processes that are the focus of this research differ according to any demographic factors. To give just one example, we believe that when caregivers become more depressed, they are prone to exhibit more potentially harmful behavior, regardless of age, kinship, ethnicity, and gender.

Finally, although almost one third of the caregivers interviewed at T1 did not complete T2 assessments, only about 15% of the sample withdrew from the study or could not be located. The remainder became ineligible for follow-up due to factors inherent in longitudinal studies of caregivers of elders in failing health (e.g., care recipient death). Still, the caregivers who were not available at T2 were less educated, were providing care to older care recipients, and were more depressed than those who completed both interviews. Consequently, we cannot say with certainty how our results would have differed had we been able to retain all of these caregivers in the study. However, we suspect that the associations between higher symptoms of depression and poorer quality of care would have been even stronger if we could have interviewed the more depressed caregivers at T2.

Despite its limitations, this study expands “caregiving outcomes” beyond the effects of providing care on the physical and psychological well-being of caregivers to include the impact of caregiver physical and mental health on the quality of care provided to care recipients. The current trend in caregiving research is toward testing intervention strategies aimed at alleviating caregiver depression (e.g., Schulz, 2000; Schulz, Martire, & Klinger, 2005; Selwood, Johnston, Katona, Lyketsos, & Livingston, 2007). This is an important endeavor in its own right for its potential to improve caregiver quality of life. Our results

further indicate that caregiver depression can be a major factor in the quality of care elders receive. They also provide some new information about possible points of intervention that may help alleviate caregiver depressive symptoms and, consequently, forestall PHB. It is noteworthy, for example, that we found little direct evidence that increases in the amount of assistance with activities of daily living provided over a one-year period were related to either increased depression or PHB. That is, in longitudinal analyses, change in amount of care provided did not emerge as a predictor of changes in caregiver depression after controlling for changes in caregiver physical symptoms and activity restriction and changes in care recipient controlling and manipulative behavior. Thus, it appears that the amount of care *per se* may be less critical than whether caregivers are physically able to handle the increasing demands, how much they perceive that care recipients are being unreasonably demanding, and the extent to which they can no longer engage in their routine activities. These variables warrant further consideration in intervention research. For example, caregivers whose physical health is declining and whose routine activities are becoming more restricted may need more assistance with caregiving duties in order to forestall depression. Those who perceive their care recipients as becoming increasingly controlling and manipulative could benefit from learning strategies for coping with these types of behavior. And, finally, we encourage researchers and clinicians to assess respectful care over time because declines in respect may serve as an early warning signal that the caregiving situation is deteriorating toward abusive behavior.

Acknowledgments

The Family Relationships in Late Life (FRILL) Project was conducted in the Department of Psychology at the University of Georgia (C. E. Lance and L. S. Miller, coinvestigators), in collaboration with the University of Pittsburgh (Richard Schulz, coinvestigator) and the University of Texas Southwestern Medical Center (Myron F. Weiner, coinvestigator). The study was supported by the National Institute on Aging (AG15321, Gail M. Williamson, principal investigator). Manuscript preparation was facilitated by a fellowship to Gail M. Williamson from the Institute for Behavioral Research at the University of Georgia.

References

- Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51:1173–1182. [PubMed: 3806354]
- Beach SR, Schulz R, Williamson GM, Miller LS, Weiner MF, Lance CE. Risk factors for potentially harmful informal caregiver behavior. *Journal of the American Geriatrics Society*. 2005; 53:255–261. [PubMed: 15673349]
- Benyamini Y, Lomranz J. The relationship between activity restriction and replacement with depressive symptoms among older adults. *Psychology and Aging*. 2004; 19:362–366. [PubMed: 15222831]
- Bookwala, J.; Yee, JL.; Schulz, R. Caregiving and detrimental mental and physical health outcomes. In: Williamson, GM.; Shaffer, DR.; Parmalee, PA., editors. *Physical Illness and depression in older adults: A handbook of theory, research, and practice*. New York: Plenum; 2000. p. 93-131.
- Cameron L, Leventhal EA, Leventhal H. Symptom representations and affect as determinants of care seeking in a community-dwelling, adult sample population. *Health Psychology*. 1993; 12:171–179. [PubMed: 8500446]
- Cameron L, Leventhal EA, Leventhal H. Seeking medical care in response to symptoms and life stress. *Psychosomatic Medicine*. 1995; 57:37–47. [PubMed: 7732157]
- Christie J, Smith GR, Williamson GM, Lance CE, Shovali TE, Silva LC. Quality of informal care is multidimensional. *Rehabilitation Psychology*. 2009; 54:173–181. [PubMed: 19469607]
- Cooney C, Howard R, Lawlor B. Abuse of vulnerable people with dementia by their carers: Can we identify those most at risk? *International Journal of Geriatric Psychiatry*. 2006; 21:564–571. [PubMed: 16783768]

- Cooper C, Selwood A, Blanchard M, Walker Z, Blizzard R, Livingston G. Abuse of people with dementia by family carers: Representative cross sectional survey. *British Medical Journal*. 2009; 338:155–157.
- Dooley WK, Shaffer DR, Lance CL, Williamson GM. Informal care can be better than adequate: Development and evaluation of the exemplary care scale. *Rehabilitation Psychology*. 2007; 52:359–369.
- Duke University, Older American Resources and Services. Multidimensional functional assessment, the OARS methodology: A manual. 2. Durham, NC: Duke University, Center for the Study of Aging and Human Development; 1978.
- Godkin MA, Wolf RS, Pillemer KA. A case-comparison analysis of elder abuse and neglect. *International Journal of Aging and Human Development*. 1989; 28:207–225. [PubMed: 2707901]
- Hertzog D, VanAlstine J, Usala PD, Hultsch DF, Dixon R. Measurement properties of the Center for Epidemiological Studies Depression Scale (CES-D) in older populations. *Psychological Assessment*. 1990; 2:64–72.
- Hooker K, Monahan OJ, Bowman SR, Frazier LD, Shifren K. Personality counts for a lot: Predictors of mental and physical health of spouse caregivers in two disease groups. *Journal of Gerontology: Psychological Sciences*. 1998; 53:73–85.
- Kosloski K, Stull DE, Kercher K, Van Dussen D. A longitudinal analysis of the reciprocal effects of self-assessed global health and depressive symptoms. *Journal of Gerontology: Psychological Sciences*. 2005; 60:296–303.
- Laumann EO, Leitsch SA, Waite LJ. Elder mistreatment in the United States: Prevalence estimates from a nationally representative study. *Journal of Gerontology: Social Sciences*. 2008; 63:248–254.
- MacKinnon DP, Lockwood CM, Williams J. Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*. 2004; 39:99–128. [PubMed: 20157642]
- Mausbach BT, Patterson TL, Grant I. Is depression in Alzheimer's caregivers really due to activity restriction? A preliminary test of the Activity Restriction Model. *Journal of Behavior Therapy and Experimental Psychiatry*. 2008; 39:459–466. [PubMed: 18294613]
- Miller LS, Lewis MS, Williamson GM, Lance CE, Dooley WK, Schulz R, Weiner MF. Caregiver cognitive status and potentially harmful caregiver behavior. *Aging and Mental Health*. 2006; 10:125–133. [PubMed: 16517487]
- Nieboer AP, Schulz R, Matthews KA, Scheier MF, Ormel J, Lindenberg SM. Spousal caregivers' activity restriction and depression: A model for changes over time. *Social Science Medicine*. 1998; 47:1361–1371. [PubMed: 9783879]
- Pillemer K, Suitor JJ. Violence and violent feelings: What causes them among family caregivers? *Journal of Gerontology: Social Sciences*. 1992; 47:165–172.
- Pinquart M, Sörensen S. Differences between caregivers and noncaregivers in psychological health and physical health: A meta-analysis. *Psychology and Aging*. 2003; 18:250–267. [PubMed: 12825775]
- Pinquart M, Sörensen P. Associations of caregiver stressors and uplifts with subjective well-being and depressive mood: A meta-analytic comparison. *Aging and Mental Health*. 2004; 8:438–449. [PubMed: 15511742]
- Pinquart M, Sörensen S. Ethnic differences in stressors, resources, and psychological outcomes of family caregiving for older adults: A meta-analysis. *The Gerontologist*. 2005; 45:90–106. [PubMed: 15695420]
- Pinquart M, Sörensen S. Correlates of physical health of informal caregivers: A meta-analysis. *Journal of Gerontology: Psychological Sciences*. 2007; 62:126–137.
- Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*. 2008; 40:879–891. [PubMed: 18697684]
- Pruchno R, Wilson-Genderson M, Cartwright F. Self-rated health and depressive symptoms in patients with end-stage renal disease and their spouses: A longitudinal dyadic analysis of late-life marriages. *Journal of Gerontology: Psychological Sciences*. 2009; 64:212–221.

- Radloff L. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 17:53–71.
- Schulz, R., editor. *Handbook on dementia caregiving: Evidence-based interventions for family caregivers*. New York, NY: Springer; 2000.
- Schulz R, Martire LM, Klinger J. Evidence-based caregiver interventions in geriatric psychiatry. *Psychiatric Clinics of North America*. 2005; 28:1007–1038. [PubMed: 16325738]
- Schulz R, O'Brien AT, Bookwala J, Fleissner K. Psychiatric and physical morbidity effects of dementia caregiving: Prevalence, correlates, and causes. *The Gerontologist*. 1995; 35:771–791. [PubMed: 8557205]
- Schulz, R.; Williamson, GM.; Bridges, M. Report to the Andrus Foundation. 1991. Limb amputation among the elderly: Psychosocial factors influencing adjustment.
- Selwood A, Johnston K, Katona C, Lyketsos C, Livingston G. Systematic review of the effect of psychological interventions on family caregivers of people with dementia. *Journal of Affective Disorders*. 2007; 101:75–89. [PubMed: 17173977]
- Shaffer DR, Dooley WK, Williamson GM. Endorsement of proactively aggressive caregiving strategies moderates the relation between caregiver mental health and potentially harmful caregiver behavior. *Psychology and Aging*. 2007; 22:494–504. [PubMed: 17874950]
- Steinmetz, SK. *Duty bound: Elder abuse and family care*. Newbury Park, CA: Sage; 1988.
- Straus M. Measuring intrafamily conflict and violence: The Conflict Tactics (CT) scales. *Journal of Marriage and the Family*. 1979; 41:75–88.
- Vitaliano PP, Zhang J, Scanlan JM. Is caregiving hazardous for one's physical health? A meta-analysis. *Psychological Bulletin*. 2003; 129:946–972. [PubMed: 14599289]
- Walters AS, Williamson GM. The role of activity restriction in the association between pain and depressed affect: A study of pediatric patients with chronic pain. *Children's Health Care*. 1999; 28:33–50.
- Williamson GM, Martin-Cook K, Weiner MF, Svetlik DA, Saine K, Hyman LS, et al. Caregiver resentment: Explaining why care recipients exhibit problem behavior. *Rehabilitation Psychology*. 2005; 50:215–223.
- Williamson GM, Schulz R. Relationship orientation, quality of prior relationship, and distress among caregivers of Alzheimer's patients. *Psychology and Aging*. 1990; 5:502–509. [PubMed: 2278672]
- Williamson GM, Schulz R. Physical illness and symptoms of depression among elderly outpatients. *Psychology and Aging*. 1992a; 7:343–351. [PubMed: 1388854]
- Williamson GM, Schulz R. Pain, activity restriction, and symptoms of depression among community-residing elderly. *Journal of Gerontology: Psychological Sciences*. 1992b; 47:367–372.
- Williamson GM, Schulz R. Caring for a family member with cancer: Past communal behavior and affective reactions. *Journal of Applied Social Psychology*. 1995; 25:93–116.
- Williamson GM, Schulz R, Bridges M, Behan A. Social and psychological factors in adjustment to limb amputation. *Journal of Social Behavior and Personality*. 1994; 9:249–268.
- Williamson, GM.; Shaffer, DR. The activity restriction model of depressed affect: Antecedents and consequences of restricted normal activities. In: Williamson, GM.; Shaffer, DR.; Parmelee, PA., editors. *Physical Illness and depression in older adults: A handbook of theory, research, and practice*. New York: Plenum; 2000. p. 93-131.
- Williamson, GM.; Shaffer, DR.; Parmelee, PA., editors. *Physical illness and depression in older adults: A handbook of theory research, and practice*. New York: Plenum; 2000.
- Williamson GM, Shaffer DR. The Family Relationships in Late Life Project. Relationship quality and potentially harmful behaviors by spousal caregivers: How we are then, how we are now. *Psychology and Aging*. 2001; 16:217–226. [PubMed: 11405310]
- Williamson GM, Shaffer DR, Schulz R. Activity restriction and prior relationship history as contributors to mental health outcomes among middle-aged and older adult caregivers. *Health Psychology*. 1998; 17:152–162. [PubMed: 9548706]
- Wolf RS. Elder abuse: Ten years later. *Journal of the American Geriatrics Society*. 1988; 36:758–762. [PubMed: 3042846]

Table 1

Intercorrelations Between Demographic and Study Variables at T1 (N = 310) and T2 (N = 213)

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.
1. CG age	–																						
2. CG gender ^a	.10	–																					
3. CG education	–.14	–.02	–																				
4. CG race ^b	–.10	–.05	–.08	–																			
5. CG-CR kinship ^c	–.33**	–.11	.04	–.01	–																		
6. CG-CR living ^d	.34**	.12	–.13	–.04	–.38**	–																	
7. CR dementia ^e	.05	–.06	–.03	.14	–.22**	.15*	–																
8. CR gender ^f	.21**	–.19**	–.15*	–.03	–.26**	.20**	.07	–															
9. CR age	.20**	–.12	.16*	–.10	.08	–.04	–.08	–.22**	–														
10. T1 PSC	.14	–.04	–.12	.12	–.18*	.09	.09	.07	.06	–													
11. T1 CMB	–.06	–.05	.00	.06	–.17*	.07	.13	.04	.02	.27**	–												
12. T1 ADL	–.00	.08	–.11	.03	–.26**	.31**	.27**	.02	.12	.16*	.15*	–											
13. T1 ARS	–.05	–.07	.04	.08	–.22**	.09	.19**	.16*	.05	.23**	.35**	.50**	–										
14. T1 CESD	.10	–.05	–.16*	.13	–.19**	.16*	.21**	.18*	–.04	.49**	.45**	.20**	.42**	–									
15. T1 Respect	.06	.03	–.07	.06	.10	.00	–.13	–.00	.00	–.11	–.35**	.04	–.13*	–.24**	–								
16. T1 PHB	.07	.02	.01	.00	–.20**	.18*	.18*	.10	–.03	.26**	.38**	.15*	.18*	.38**	–.43**	–							
17. T2 PSC	.09	.01	–.16	.01	–.14	.07	.11	.09	.05	.70**	.20*	.11	.22**	.41**	–.17**	.19*	–						
18. T2 CMB	–.05	–.16	.03	.04	–.11	.05	.14	.10	.00	.24**	.73**	.16	.41**	.38**	–.39**	.40**	.24**	–					
19. T2 ADL	–.01	.04	.05	.04	–.30**	–.01	.41**	.02	–.00	.15	.17*	.75**	.49**	.16	–.04	.19*	.12	.21*	–				
20. T2 ARS	.01	–.04	–.05	–.02	–.26**	.15	.24**	.26**	–.08	.35**	.36**	.44**	.70**	.43**	–.17**	.27**	.34**	.47**	.48**	–			
21. T2 CESD	.08	.05	–.10	.11	–.22**	.17	.22*	.18*	–.10	.41**	.35**	.29**	.39**	.67**	–.20**	.32**	.43**	.42**	.27	.54**	–		
22. T2 Respect	.09	.05	–.16	–.04	.15	–.02	–.14	–.00	.05	–.13	–.39**	.02	–.18*	–.34**	.74**	–.37**	–.20**	–.41**	–.10	–.24**	–.27**	–	
23. T2 PHB	.09	–.01	–.03	.08	–.19*	.19*	.18*	.14	–.06	.24**	.37**	.12	.19*	.34**	–.41**	.72**	.21	.39**	.27**	.29**	.36**	–.42**	–

Note. CG = caregiver, CR = care recipient; T1 = Time 1, T2 = Time 2; PSC = physical symptoms checklist; CMB = controlling and manipulative behavior; ADL = amount of assistance; ARS = activity restriction, CESD = depressive symptoms; PHB = potentially harmful behavior.

a 1 = female, 2 = male.
b 1 = white, 2 = black.
c 1 = spouse, 2 = nonspouse/other.
d 1 = do not live together, 2 = live together.
e 1 = no, 2 = yes.
* $p \leq .01$.
** $p \leq .001$.

Table 2

Hierarchical Regression Analysis Predicting T2 Caregiver Depressive Symptoms (N = 213)

Predictor Variable	R^2_{change}	Standardized Betas
Step 1	.49***	
T1 depressive symptoms		.55***
T1 physical symptoms		.08
T1 CMB		.06
T1 amount of care provided		.11
T1 activity restriction		.02
Step 2	.09***	
T2 physical symptoms		.19**
T2 CMB		.15*
T2 amount of care provided		-.04
T2 activity restriction		.30***
Total R^2	.58***	

Note. Caregiver education, kinship, living arrangements, and care recipient gender and dementia status were controlled in these analyses. CMB = controlling and manipulative behavior.

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

Table 3

Hierarchical Regression Analysis Predicting T2 Caregiver-Reported Respect (N = 213)

Predictor Variable	R^2_{change}	Standardized Betas
Step 1	.58***	
T1 respect		.69***
T1 depressive symptoms		-.11*
Step 2	.01ns	
T2 depressive symptoms		-.10
Total R^2	.59***	

Note. Caregiver education, kinship, living arrangements, and care recipient gender and dementia status were controlled in these analyses.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.

Table 4

Hierarchical Regression Analysis Predicting T2 Caregiver PHB (N = 213)

Predictor Variable	R^2_{change}	Standardized Betas
Step 1	.54***	
T1 PHB		.65***
T1 depressive symptoms		.01
T1 respect		-.10
Step 2	.04***	
T2 depressive symptoms		.15*
T2 respect		-.21**
Total R^2	.57***	

Note. Caregiver education, kinship, living arrangements, and care recipient gender and dementia status were controlled in these analyses. PHB = potentially harmful behavior.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.