THE GERONTOLOGICAL SOCIETY OF AMERICA®

Journals of Gerontology: Social Sciences
cite as: *J Gerontol B Psych Sci Soc Sci*, 2015, Vol. 70, No. 5, 804–812
doi:10.1093/geronb/gbu165
Advance Access publication December 3, 2014

OXFORD

Original Article

Social Support and Grandparent Caregiver Health: One-Year Longitudinal Findings for Grandparents Raising Their Grandchildren

Bert Hayslip Jr., Heidemarie Blumenthal, and Ashley Garner

Department of Psychology, University of North Texas, Denton.

Correspondence should be addressed to Bert Hayslip Jr., PhD, Department of Psychology, University of North Texas, 821 Sail Lane #101, Murrells Inlet, SC 29576. E-mail: berthayslip@my.unt.edu

Received June 3 2013; Accepted October 29 2014.

Decision Editor: Merril Silverstein, PhD

Abstract

Objectives. The role of social support in predicting health among grandparents raising grandchildren was explored among 86 grandparent caregivers assessed twice over a 1-year timeframe.
Method. Relationships between social support and health were ascertained via cross-lagged analyses. Regression analyses explored the mitigating role of social support in influencing both health and depression among grandparent caregivers.
Results. Cross-lagged findings suggested that social support predicted health over time rather than vice versa. Regression analyses found that this relationship held when adjusting for multiple covariates as well as previous levels of health, depression, and parental stress. Additionally, the interaction of overall health and social support at Time 1 predicted Time 2 depression. For those who lacked social support, overall health was negatively related to self-reported depression symptoms 1 year later; this was not the case among those reporting greater social support. In addition, parental stress moderated the effects of social support on depression, and social support moderated the effects of parental stress on depression.
Discussion. Greater social support may lay the groundwork for better health, and such support, in concert with better health as well as lessened parental stress may prevent the development of depression among grandparent caregivers.

Key Words: Depression—Grandparenting—Health outcomes—Social support

The physical health of caregiving grandparents is a key factor impacting their adjustment (Hayslip & Kaminski, 2005), where declines in health may impair a grandparent's ability to manage the physical and emotional demands of raising a grandchild (Baker & Silverstein, 2008). As social support may mitigate the impact of caregiving on health and depression among grandparent caregivers, the goals of the present article are to longitudinally explore the role of social support in influencing the health of grandparent caregivers as well as to ascertain the relationship between health, parental stress, social support, and grandparent depression over time.

Significantly, such grandparents may neglect their own health (Minkler & Fuller-Thomson, 1999), and thus are less likely to engage in behaviors that are preventative regarding illness than are their noncaregiving counterparts (Baker & Silverstein, 2008). Poorer health has been linked to less positive grandparent affective functioning, less role satisfaction, and less productive/satisfying relationships with the grandchild being cared for (Hayslip, Shore, & Emick, 2006). Among caregiving grandmothers, risky health behaviors (i.e., obesity/lack of exercise, smoking, alcohol use) are common; such behaviors covary with the duration of caregiving, greater

financial stress, and higher parental stress (Roberto, Dolbin-McNab, & Finney, 2008).

Depression and Health Among Grandparent Caregivers

Poorer grandparent health over time may heighten both the grandparent's and grandchild's fears about the long-term future of their relationship, wherein it is not surprising that the perception of poorer health covaries with length of caregiving (Musil & Ahmad, 2002). While some health problems may predate caregiving, assuming these responsibilities may exacerbate existing health conditions, where health-related quality of life is linked to raising more grandchildren and an increased likelihood of depression (Neely-Barnes, Graff, & Washington, 2010). In light of (a) the role of health in contributing to depression among older adults (Lewinsohn, Rohde, Seeley, & Fischer, 1991), (b) the role of social support in impacting both physical and mental illness (Kohn & Smith, 2006), and (c) the fact that older adults may manifest their reaction to either chronic illness and/or poor health via depression (Barusch & Wilby, 2010), it may be that the potential impact of poorer health on depression among grandparent caregivers might be mitigated by social support, where greater such support may be protective in this respect. Social support also can impact one's emotional appraisal of stressors and/or modulate reactivity to stressors, and consequently lessen the negative emotional and/or physical health consequences of exposure to caregiving stress, where higher levels of reactivity are associated with poorer health (Almeida, Piazza, Stawski, & Klein, 2011). Significantly, no longitudinal data exist regarding the relationship over time between health, social support, and depression among grandparent caregivers.

Theoretical Perspectives on the Social Support-Health Relationship

A primary theoretical framework relevant to the present study is Stress Theory (Almeida et al., 2011; Eisdorfer & Wilkie, 1977). This approach centralizes the role of psychosocial stress as an undermining influence on neuroendocrine/immune system functioning (i.e., the increased release of pituitary, adrenal cortical system hormones [e.g., cortisol], sympathetic nervous system activation via increases in blood pressure and norepinephrine). Stress interferes with the otherwise homoeostatic mechanisms of these systems to regulate health and influence healthy behavior later in life; such reactivity is age-related (Aldwin, Spiro, & Park, 2006; Almeida et al., 2011). This is complemented by perceptions that such stressors are ongoing and beyond one's control (Almeida et al., 2011); such appraisals are emphasized in the personality stress model of aging (Wahl, 2001).

In this respect, the challenges of parenting can be personally stressful to grandparents; the role confusion and role stress many experience is linked to their parenting skills (Hayslip, Shore, Henderson, & Lambert, 1998; Smith, Palmieri, Hancock, & Richardson, 2008). That such persons are viewed as less efficacious parents by noncaregiving age peers further contributes to the stigma and isolation that grandparent caregivers report, exacerbating the stresses with which they must cope (Hayslip & Glover, 2008). In this respect, the availability of and access to social support would be a resource and consequently be protective (Aldwin et al., 2006; Hayslip & Smith, 2013).

Social convoy theory (Antonucci, 2001; Antonucci, Birditt, & Akiyama, 2009) argues that social support can benefit grandparent caregivers in that personal resilience, the use of preventative health care, and self-care practices might each be enhanced (Dolbin-McNab, Roberto, & Finney, 2013; Fruhauf & Bundy-Fazioli, 2013). Social support provided by one's convoy may involve the provision of tangible aid, emotional support, and affirmation (i.e., people feel they share the same values and goals). As one's convoy often shrinks with increased age (Antonucci, 2001), the quality of social support is critical, in that many grandparent caregivers are social isolates (Wohl, Lahner, & Jooste, 2003). Social support might also act as an adjunct to the formal provision of health services by health care professionals as well as be provided by fellow grandparent caregivers as mentors, noncaregiving grandparent age peers, or even by some grandchildren under one's care.

Despite concerns about the health of grandparent caregivers, no data exist speaking to the potential influence of social support on a grandparent's health over time. That a lack of social support would lead to negative health changes is evidenced by the many lifestyle and relationship-related issues confronting many grandparent caregivers (Jendrek, 1993). While health difficulties may interfere with a grandparent's ability to parent a difficult child (Hayslip et al., 1998), it also may be that the demands of caring for a grandchild may lead to further adverse health consequences for caregiving grandparents (Dowdell, 1995).

Longitudinal Examinations of Grandparent Caregiver Health

Existing longitudinal data presents a mixed picture of the impact of grandparent caregiving on health, with some finding no negative impact (Hughes, Waite, LaPierre, & Luo, 2007); these researchers failed to control for the influence of social support. Li-Jung and colleagues (2013) similarly found grandparent caregivers to report better health, be more satisfied with emotional support from family and friends, and to be more likely to get financial support from their adult children, all relative to noncaregiving grandparents. Chen and Liu (2012) found that skipped generation grandparent caregivers did not experience health difficulties, especially if they enjoyed a greater income. Conversely, coresiding grandparent caregivers whose childcare roles were more intense experienced greater health declines; this was especially true for grandmothers. While Chen and Liu (2012) found a lighter caregiver load to protect individuals from health difficulties, social support was not assessed/controlled for. In contrast, Musil and colleagues (2011) found declines in physical health over time among grandmother caregivers, variability over time in subjective and instrumental social support, and poorer health to be associated with switching to higher levels of caregiving over time. Grundy and colleagues (2012) found that grandfathers who provided at least 4 hr of care per week had greater life satisfaction 2 years later, and that those who provided material help had better physical–mental health later. While controls for education and income were utilized, no assessment of social support was made in this study.

The Current Study

In light of the mixed picture regarding the impact of grandparent caregiving on health, it may be that grandparent caregivers whose health is not negatively impacted by caregiving enjoy more social support, while for those experiencing little support in the face of the demands of caregiving, their health suffers.

Social support provided by those in one's social network that is both timely and effective may mitigate the negative consequences accompanying caregiving, contributing to greater quality and perhaps greater quantity of life among grandparents raising their grandchildren. As isolation from others, feeling invisible, and poor health are concerns shared by many grandparent caregivers (Wohl

et al., 2003), it is crucial that such persons get the social support that they need.

The present study explored the temporal relationship between self-reported health and the social support reported by grandparent caregivers, significant in that no longitudinal data exist specifically addressing social support's potential impact on grandparent health over time, though we note that Musil, Warner, Zauszniewski, Wykle, and Standing (2013) in a cross-sectional study found that social support moderated the effects of family life stress on grandparent caregiver depression. While social support may longitudinally predict health, it also could be that health may also predict social support over time, where poorer health may undermine a grandparent's access to social support, borne of isolation from others and/or depression-related restrictions in activity and relationships with them.

In light of the potential bidirectional relationship of health and social support among grandparent caregivers, the present 1-year longitudinal study specifically examined relationships among social support and three health variables (i.e., self-rated physical health; health-related limitations; overall health) to explore (a) the directionality of such influence via cross-lagged panel analyses, (b) the unique variance in health over time accounted for by social support, controlling for important correlates (e.g., age, gender, marital status, parental stress), and (c) the unique and interactive role of social support and health in relation to depression over time.

Method and Procedure

Participants

The longitudinal sample of 86 grandparent caregivers was drawn from a larger study (n = 239) exploring grandparent caregiver resilience (Hayslip et al., 2013). Grandparent caregivers were recruited across the United States and Canada, using available resources that included a number of grandparent organizations. Grandparents qualified for the study if they were currently caring for a grandchild on a full-time basis. Grandparents in the larger sample (M_{age} = 58.6, SD = 8.17, range = 38–90; 42 males, 196 females, one omission of gender) were predominantly skipped-generation in nature; a minority was coparenting in nature. Seventy-nine percent were white, and African American grandparents made up 13.8% of the total sample. Duration of caregiving averaged 6.44 years (SD = 4.68, range = 1–24). Grandparents cared for an average of 1.61 grandchildren (SD = 1.19, range = 1–13); grandchild age averaged 9.44 (SD = 4.68, range = 1–24). Annual household income ranged from less than $10,000 to more than $60,000: 13.1% reported annual incomes up to $20,000, 24.3% $20,000–40,000, 28.7% $40,000–60,000, and 33.9% reported earning more than $60,000 annually.

The 1-year longitudinal sample consisted of caregiving grandparents (M_{age} = 59.39, SD = 7.79, range = 43–73; 83.7% women) who had full-time responsibility for their grandchildren (M_{age} = 9.66, SD = 4.29; 44.2% girls). The current analyses included those grandparent caregivers who provided data at both time points. The racial/ethnic composition of the longitudinal sample was: 89.2% white, 6% African American, and 4.8% Hispanic. The majority (66.7%) of these grandparents reported being married, 17.8% were divorced, 10.7% were widowed, and 4.8% were single. Thirty-seven percent of grandparents were working full-time, 18.5% part-time, and 44.5% were retired. Grandparents reported caring for up to four grandchildren under the age of 18 years who currently lived with them; 66.7% were raising one grandchild, having been the primary caregiver for at least one grandchild for 1–24 years. Annual household income (n = 75) ranged from less than $10,000 to more than $60,000: 9.9% reported annual incomes up to $20,000, 27.2% $20,000–40,000, 27.1% $40,000–60,000, and 35.8% reported earning more than $60,000 annually. For data analytic purposes, income was coded along a continuum of increments of $10,000 annually, ranging from 1 to 7, with higher values indexing greater annual income. Table 1 presents the descriptive data regarding the larger sample and the longitudinal sample. Grandparent caregivers who participated in the longitudinal study were older and had more grandchildren living at home than those who did not participate (Table 1).

Measures

Social support

Social support at both assessments was indexed via the *Multidimensional Scale of Perceived Social Support* (Dahlem, Zimet, & Walker, 1991; Zimet, Dahlem, Zimet, & Farley, 1988). Participants respond on a five-point scale (1 = *very strongly disagree* to 5 = *very strongly agree*) to 12 statements indicating the presence of social support across family ("My family really tries to help me"), friends ("I can count on my friends when things go wrong"), and

Table 1. Means (Standard Deviations) of Descriptive and Primary Variables Across Assessments

Variable	Total T1 sample, n = 239	Longitudinal sample (T1), n = 86	Longitudinal sample (T2), n = 86
% Female	82.4	83.7	—
% White	79.6	89.5[a]	—
Age	57.99 (8.20)	59.39 (7.79)[a]	60.50 (7.81)
GC in care	1.60 (1.18)	1.41 (0.70)[a]	1.30 (0.69)
GC age	9.52 (4.69)	9.66 (4.29)	10.27 (4.57)
Years of care	6.43 (4.68)	6.09 (4.79)	6.65 (4.73)
Social support	39.39 (13.51)	38.94 (12.42)	38.67 (13.30)
Self-health	3.17 (0.93)	3.28 (0.87)	3.24 (0.98)
Limitations[b]	32.75 (6.48)	33.24 (5.86)	32.65 (7.18)
Overall health	76.21 (13.49)	77.14 (12.98)	72.91 (12.96)
Depression	29.85 (9.01)	29.93 (9.16)	28.28 (7.07)
Parental stress	79.25 (23.77)	81.69 (24.20)	79.93 (24.13)

Note. n = 86. GC = grandchild/grandchildren.

[a]Total sample and longitudinal sample difference significant at $p < .05$.

[b]Variable coded such that higher values indicate *better* health (i.e., fewer limitations).

significant others ("There is a special person in my life that cares about my feelings"). Responses are summed to create a total social support score. This measure consistently evidences good psychometric properties (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Dahlem et al., 1991; Zimet et al., 1988; current sample Cronbach's alpha = .94 at Time 1, α = .95 at Time 2).

Physical health

At both assessments, physical health was assessed in three ways. First, participants responded to a single, face-valid self-assessment of *self-rated physical heath* at present (range: 0 = *poor*, 5 = *excellent*) drawn from the *Short Form-36 General Health Survey* (SF-36; Ware, Snow, Kosinski, & Gandek, 1993). Second, the 16 items from the SF-36 addressing health-related functioning were used to create a total *health-related limitations* score. Participants were asked to respond on a 3-point scale (1 = *yes, a lot*; 3 = *no, not at all*) to what degree their health interfered with nine daily physical activities in a typical week (e.g., carrying groceries, climbing stairs). Participants then responded either *yes* (1) or *no* (2) to whether they experienced any problems in their work or other daily activities over the past 4 weeks due to physical health (four items) or emotional problems (three items). Responses were then summed, creating a total limitations score with a potential range of 16 (severe limitations) to 41 (no limitations). Finally, these two indices were combined with the nine SF-36 items addressing "pep" over the past month (e.g., "Did you have a lot of energy;" 1 = *none of the time* to 6 = *all of the time*) and a single item addressing self-assessed past-year health trajectory (i.e., "Compared to 1 year ago, how would you rate your health in general now?;" 1 = *much worse* to 5 = *much better*) to create a multidimensional, *overall health* score. The widely-used SF-36 consistently evidences good psychometric properties (Ware et al., 1993; current study *health-related limitations* α_{T1} = .89, α_{T2} = .93, *overall health* α_{T1} = .91, α_{T2} = .90).

Depression

Depressive symptoms at both occasions were assessed via the *Center for Epidemiologic Studies Depression Scale* (CES-D; Radloff, 1977). This 20-item self-report scale includes items such as "I felt like I could not shake off the blues, even with the help of family and friends," "I thought my life had been a failure," and "I had trouble keeping my mind on what I was doing." Using a 4-point Likert-type scale (1 = *rarely or some of the time* to 4 = *most or all of the time*), participants were asked to endorse the response that best describes how often each item reflected how they felt in the past week. Responses are summed (four items reverse coded) such that higher total scores indicate greater depression. The scale exhibits high internal consistency (current sample α = .89), adequate test-retest stability (correlations range from .45 to .70), exceptional concurrent validity with clinical and self-report criteria, and substantial construct validity (Radloff, 1977).

Parental Stress

Parenting stress at both occasions was assessed via the *Parenting Stress Index/Short Form (PSI/SF;* Abidin, 1990), and all PSI/SF items were reframed to apply to "my grandchild." The PSI/SF includes 36 items addressing parental distress (e.g., "I feel trapped by my responsibilities as a parent"), parent-child dysfunctional interactions (e.g., "Sometimes my grandchild does things that bother me just to be mean"), and child difficulty (e.g., "My grandchild's sleeping or eating schedule was much harder to establish than I expected"). Items were responded to on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*; responses were summed to provide a total parental distress score. The PSI/SF demonstrates high internal consistency (current sample α = .92), high test-retest stability (*r* = .84), adequate construct, discriminant and predictive validity, acceptable concurrent validity with clinical and self-report criteria, and acceptable cross-cultural validity (Abidin, 1990).

General Analytic Strategy

Initially, descriptive data and zero-order relationships were explored, where zero-order and partial correlations (controlling for household income's potential relationship to health and caregiving stress, see Hughes et al., 2007) among social support and health-related variables were examined. As these partial correlations did *not* differ significantly from those at the zero-order level, zero-order correlations were used in all analyses.

Stationarity of the relations between social support and the health indices were addressed via a Steiger's *Z*-test of the synchronous correlations (Meng, Rosenthal, & Rubin, 1992). Relations among Time 1 and Time 2 social support and physical health were then examined via three cross-lagged panel correlation procedures using the Pearson-Filon test (e.g., Kenny, 1975; Kenny & Harackiewicz, 1979; Locascio, 1982). Next, all continuous predictor variables were standardized and hierarchical regression analyses were conducted to examine whether the linkages between Time 1 social support and Time 2 health indices were robust to the inclusion of age, gender, marital status, depression, parental stress, and the respective health variable at Time 1. Separate hierarchical regressions were also performed including income as a covariate, based upon the 75 grandparents who provided such data. Finally, a series of hierarchical regression analyses were conducted (a) to examine the unique and interactive effects of Time 1 social support and health indices in relation to Time 2 depression while controlling for demographic variables (e.g., gender, marital status), and depression taken at Time 1, (b) to explore the moderating effects of social support in parental stress–depression relationships, and (c) to ascertain the moderating role of parental stress in social support–depression relationships.

Results

Social Support and Health Over Time

Table 2 presents the correlations among all primary study variables. Regarding the primary goal of this study, which targeted the examination of the question regarding the directionality of the relationship between social support and health over time, a series of cross-lagged panels analyses were carried out, particular to each measure of health utilized here. The preliminary test for stationarity indicated equivalency of the synchronous correlations. Specifically, the Time 1 social support and self-rated health correlation did not differ significantly from the correlation of these variables at Time 2 (Steiger's $Z = 0.92$, $p > .05$), the Time 1 social support and limitations correlation did not differ significantly from the correlation at Time 2 ($Z = 1.75$, $p > .05$), and the Time 1 social support and overall health correlation did not differ significantly from the correlation at Time 2 ($Z = 1.59$, $p > .05$). Accordingly, the Pearson-Filon test was conducted for all health variables.

Cross-lagged analyses indicated that, when accounting for existing autocorrelations and synchronous correlations, the correlation of social support at Time 1 and self-rated health at Time 2 ($r = .37$, $p < .01$) was significantly greater than the correlation of Time 1

Table 2. Zero-Order Correlations for Study Variables at Time 1 (T1) and Time 2 (T2)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. T1 social support	—										
2. T1 self-health	.28**	—									
3. T1 limitations[a]	.30**	.59**	—								
4. T1 overall health	.36**	.64**	.84**	—							
5. T1 depression	−.38**	−.29**	−.43**	−.65**	—						
6. T1 parental stress	−.34**	−.20	−.26*	−.38**	.48**	—					
7. T1 participant age	.05	.07	−.13	−.00	−.10	−.10	—				
8. T2 social support	.27*	−.05	−.04	−.01	.01	−.07	.00	—			
9. T2 self-health	.37**	.66**	.55**	.56**	−.30**	−.34**	.13	.14	—		
10. T2 limitations[a]	.36**	.52**	.75**	.62**	−.35**	−.24*	−.17	.03	.59**	—	
11. T2 overall health	.42**	.46**	.63**	.64**	−.42**	−.31**	−.08	.12	.61**	.85**	
12. T2 depression	−.21*	−.25*	−.24*	−.39**	.49**	.30**	−.10	−.16	−.28**	−.24*	−.58**

[a]Variable coded such that higher values indicate *better* health (i.e., fewer limitations).
*$p < .05$. **$p < .01$.

self-rated health and Time 2 social support ($r = -.05$, *NS*; $Z = 3.23$, $p < .01$). This pattern was consistent across health-related limitations ($r = .36$, $p < .01$ vs $r = -.04$, *NS*; $Z = 3.10$, $p < .01$) and overall health ($r = .42$, $p < .01$ vs $r = -.01$, *NS*; $Z = 3.32$, $p < .01$); Time 1 social support predicted health at Time 2 in each case.

We then conducted several hierarchical regression analyses to explore the question of whether social support indeed predicted health over time, adjusting for a number of sociodemographic covariates. Table 3 summarizes these regression analyses where, even after adjusting for the variance accounted for by the covariates (age, gender, marital status, depression, parental stress, health at Time 1), social support at Time 1 *still* significantly predicted health-related limitations [final model: $F(7, 71) = 14.41$, $p < .001$], as well as overall health [final model: $F(7, 70) = 9.55$, $p < .001$] 1 year later. Employing such covariates not only adjusts for their potential impact on both health and social support, but it is also consistent with the importance of accounting for the influence of such variables as predisposing factors in understanding access to health care resources (Anderson, 1995).

When income was added as an additional covariate, the relationship between social support and both health-related limitations and overall health was no longer statistically significant ($B = .17$, $p < .058$; $B = .17$, $p < .08$), though the absolute value of its relationship to health remained quite similar to that when income was not included as an additional covariate (Table 3). It should be noted that in each case, samples were smaller when income was included as a covariate (*n*s of 75 and 74, respectively), and thus a lessening of statistical power likely explains this pattern, an important consideration in light of the smallness ($n = 86$) of the longitudinal sample to begin with. In this light, we note that the relationships between income and health 1 year later were negligible ($B = .04$, $p > .05$; $B = .07$, $p > .05$).

Table 3. Social Support (and Covariates) at Time 1 Predicting Health Indices 1 Year Later

	Adj R^2	*t* (each predictor)	β	sr^2	*p* Value
Dependent variable: self-rated health					
Step 1	.45				<.001
Age		0.90	.07	.01	.370
Gender		−1.61	−.13	.03	.110
Marital status		−0.55	−.04	.00	.580
Depression		−0.36	−.03	.00	.720
Parental stress		−1.74	−.16	.04	.085
Self-rated health		7.09	.61	.41	<.001
Step 2	.46				<.001
Social support		1.49	.14	.03	.138
Dependent variable: health-related limitations					
Step 1	.52				<.001
Age		−0.95	−.07	.01	.343
Gender		−1.59	−.12	.03	.116
Marital status		−0.05	.00	.00	.954
Depression		−0.31	−.03	.00	.757
Parental stress		−0.52	−.04	.00	.601
Health-related limitations		7.88	.69	.46	<.001
Step 2	.54				<.001
Social support		2.09	.18	.05	.040
Dependent variable: overall health					
Step 1	.41				<.001
Age		−0.62	−.05	.00	.536
Gender		−1.63	−.14	.03	.106
Marital status		−1.53	−.14	.03	.131
Depression		0.11	.01	.00	.907
Parental stress		−0.53	−.05	.00	.595
Overall health		5.04	.59	.26	<.001
Step 2	.43				<.001
Social support		2.08	.20	.05	.041

Note. β = standardized beta weight.

Social Support, Health, and Depression Over Time

A secondary goal of the present study was to explore the question of whether social support moderated the relationship between health and depression over time, framed in the literature suggesting that chronic illness and/or poor health is an antecedent of depression in later life (Barusch & Wilby, 2010). Table 4 summarizes the regression analyses addressing relationships among social support and health at Time 1 and depression at Time 2. As seen in Table 2, data at the zero-order level indicated that the social support and health indices at Time 1 consistently evidenced a negative relation with depression at Time 2, such that greater perceived support/better health was related to lower levels of depression. However, once age, gender, marital status, and depression at Time 1 were included as covariates in the regression analyses, neither social support nor any of the health variables evidenced a significant main effect on Time

Table 4. Social Support and Health at Time 1 Predicting Depression 1 Year Later

	Adj R^2	*t* (each predictor)	β	sr^2	*p* Value
Step 1	.31				<.001
Age		−0.92	−.09	.00	.361
Gender		2.36	.23	.05	.021
Marital status		1.66	.17	.02	.101
Depression		4.44	.46	.19	<.001
Step 2	.32				<.001
Social support		−1.12	−.12	.01	.264
Self-rated health		−0.97	−.09	.00	.333
Step 3	.31				<.001
Social support × Self-rated health		0.23	.02	.00	.812
Step 1	.31				<.001
Age		−0.92	−.09	.00	.361
Gender		2.36	.23	.05	.021
Marital status		1.66	.17	.02	.101
Depression		4.44	.46	.19	<.001
Step 2	.31				<.001
Social support		−1.16	−.12	.01	.249
Health-related limitations		−0.83	−.09	.00	.407
Step 3	.33				<.001
Social support × Limitations		1.70	.18	.02	.094
Step 1	.31				<.001
Age		−0.91	−.09	.00	.363
Gender		2.34	.23	.05	.022
Marital status		1.65	.17	.02	.103
Depression		4.38	.46	.19	<.001
Step 2	.32				<.001
Social support		−1.15	−.12	.01	.251
Overall health		−0.96	−.12	.00	.339
Step 3	.36				<.001
Social support × Overall health		2.30	.24	.04	.025

Note. β = standardized beta weight.

2 depression. However, these findings were qualified by a significant ($p < .05$) interaction between social support and overall health. Following probing procedures as outlined in Hayes and Matthes (2009) and Hayes (2013), the relation between overall health at Time 1 and depression at Time 2 was examined as a function of Time 1 social support at three levels: 1 *SD* above the mean, between 1 *SD* above and below the mean, and 1 *SD* below the mean. Tests of these conditional effects indicated that the relation between overall health and depression was significant among those reporting lower social support (β = −.38, $t = -2.24$, $p = .028$), but not at intermediate levels of social support (β = −.12, $t = -0.91$, $p = .363$) nor at higher levels of social support (β = .14, $t = 0.80$, $p = .424$).

In light of the earlier discussion centralizing the role of caregiving stress in potentially impacting both the physical and mental health of grandparent caregivers, further analyses were conducted including parental stress as a covariate in this model. This analysis, however, indicated that the interaction was not robust to the inclusion of parental stress. Specifically, Step 1 of this model accounted for approximately 37% of the variance in depression at Time 2 (parental stress: $p = .007$, $sr^2 = .07$), and the interaction between overall health and social support at Step 3 no longer met the criteria for statistical significance (β = .20, $t = 1.91$, $p = .060$, $sr^2 = .03$).

Table 5. Social Support and Parental Stress at Time 1 Predicting Depression 1 Year Later

	Adj R^2	*t* (each predictor)	β	sr^2	*p* Value
Step 1	.31				<.001
Age		−0.84	−.08	.00	.399
Gender		2.20	.22	.04	.031
Marital status		1.71	.18	.02	.091
Depression		2.86	.37	.08	.006
Overall health		−1.14	−.14	.01	.258
Step 2	.36				<.001
Social support		−0.78	−.08	.00	.434
Parental stress		−2.39	.27	.05	.020
Step 3	.41				<.001
Social support × Parental stress		−2.56	−.25	.05	.013

Note. β = standardized beta weight.

Analyses were then conducted in an effort to explore the role of parental stress in these relations. Specifically, the interaction between social support and parental stress at Time 1, controlling for overall health (as well as age, gender, marital status, and depression at Time 1) was examined as it impacted depression. As seen in Table 5, each step of the model accounted for a significant proportion of the variance in Time 2 depression, and both the main effect of parental stress and it's interaction with social support were significant. First, we explored parental stress as a moderator of the relationship between social support and depression. Probing of the conditional effects here indicated that the relation between social support and depression was significant among those reporting higher parental stress (β = −.35, $t = -2.36$, $p = .021$), but not intermediate (β = −.13, $t = -1.19$, $p = .237$) or lower levels of parental stress (β = .09, $t = 0.71$, $p = .475$). Complementarily, we also explored the moderating role of social support in impacting the relationship between parental stress and depression, where probing of the conditional effects indicated that the relation between parental stress and depression was significant among those reporting lower (β = .48, $t = 3.45$, $p = .001$), and intermediate levels of social support (β = .24, $t = 2.00$, $p = .049$) but not at higher levels of social support (β = .00, $t = 0.04$, $p = .965$).

Discussion

Social Support and the Health of Grandparent Caregivers

A central question here dealt with the directionality of relationships between social support and health over time. These 1-year longitudinal data clearly indicate that over time, greater social support predicts better health among grandparent caregivers, rather than the converse. *M* as per cross-lagged analyses. Moreover, even after accounting for numerous covariates, including the respective Time 1 health indices, we found that social support predicted health over time; this relationship held for two of three measures of health (health-related limitations, overall health). By employing multiple covariates in exploring the social support-health relationship, we addressed the impact of several predisposing factors that might impact health and enhance the likelihood of grandparent caregivers accessing such services, as per the Social Behavioral Model (Anderson, 1995).

Consistent with Social Convoy Theory, our data suggest that the provision of reliable emotional and instrumental support from friends and family is a key component in efforts to improve the health of grandparent caregivers. Importantly, it was informal support that was *perceived* as potentially helpful and accessible that was assessed here. It may be that social support could facilitate grandparent caregivers' health in several ways: (a) in removing barriers to service via making grandparents aware of what health-services exist, (b) in making timely and effective referrals to health care professionals, and (c) via feedback from others in one's network, leading to a change in one's health beliefs and values, (d) in facilitating access to health-related information, or (e) in alerting individuals to health difficulties in need of attention (Roberto et al., 2008). Additionally, in helping the grandparent develop self-care skills, social support also can be protective regarding the development of resilience (Dolbin-McNab et al., 2013).

Social Support, Health, and Depressive Symptoms Among Grandparent Caregivers

A secondary question here reflected social support's potential mitigating role in understanding the relationship between health and depression over time, framed in the context of Stress Theory and the literature on depression and aging. While we did find that more social support and better health each predicted lessened depression, these relationships were weakened when controlling for numerous sociodemographic variables. However, while the interaction of health limitations and social support only approached statistical significance ($p < .10$) in predicting Time 2 depression, the interaction of overall health and social support did so ($p < .05$; Table 4). Our findings indicated that poorer health in concert with less informal social support at Time 1 seemed to predispose caregivers to more depressive symptoms at Time 2. Importantly however, levels of depressive symptoms did not differ as a function of health status among those reporting greater social support. Thus, to an extent, the mitigating role of social support is evident via the findings here. This pattern does suggest that to the extent that one's health is worse, the comparative absence of support from others may leave one open to depression. For such persons, energy must be utilized to deal with one's affective state, leaving less energy to gain information about needed health care services, develop new coping skills, or overcome barriers to needed services for oneself and/or a grandchild. While it may be that social support is a necessary but not sufficient influence in lessening the impact of health on depressive symptoms among grandparent caregivers, our findings also suggest that social support, in concert with other factors (Barusch & Wilby, 2010) might enhance the protective effects of better health on caregiver depression. This question awaits further research.

We also found that parental stress moderated the impact of social support on depression and that social support moderated the effect of parental stress on depression, where (a) more social support predicted less depression among those who reported greater, but not intermediate and lesser parental stress, and (b) greater parental stress predicted more depression among those reporting lesser and intermediate, but not higher levels of social support. These findings suggest that social support is protectively crucial for those reporting more parental stress and that parental stress undermines the mental health of those lacking social support, consistent with the potentially debilitating role of such stress among grandparent caregivers and the mitigating role of social support in this respect.

The findings of the present study might suggest that interventions to (a) enhance access to social support, (b) enable caregiving grandparents to better able to cope with the stresses of parenting a grandchild by improving their parenting skills (Wong, Gonzales, Montaño, Dumka, & Millsap, 2014), (c) acquire new coping and/or thinking skills to aid one in coping with depression (Gallagher & Thompson, 2007) and/or (d) improve their health behaviors, should be especially targeted to caregiving grandmothers, significant in that depression scores were lower for men ($M = -0.52$) than for women ($M = 0.08$) here. Perhaps such caregivers have neglected their health over time or have become more isolated, laying the groundwork for depression. Further work with grandparent caregivers may or may not bear out such recommendations, however.

Limitations of the Present Study

Despite the longitudinal nature of the data here, it is important to observe that cross-lagged patterns cannot be not interpreted as causal in nature; other intervening variables may help to account for the temporal relationship between social support and health; they only reflect the directionality of such a relationship (Rogosa, 1980). Even with this in mind, health assessed at Time 2 cannot logically predict social support assessed at Time 1 (Kenny, 1975; Kenny & Harackiewicz, 1979; Locascio, 1982).

The conclusions that can be drawn from the current data warrant continued study with a larger and more sociodemographically diverse sample of grandparent caregivers. Thus, generalizations to other subgroups of caregiving grandparents (e.g., African American or Hispanic grandparents, those of lower socioeconomic status) whose health risks and both the degree and nature of social support may differ from those of the present sample, are limited.

Despite its longitudinal nature, the sample was small, and may reflect a selective participation bias associated with those grandparents in better health or with greater social support being more likely to volunteer for the project. However, it is important to note that the longitudinal sample did not differ from the larger Time 1 sample across key variables of interest (e.g., parental stress, depression, social support, health; Table 1). In addition, the smallness of the longitudinal sample may have undermined the statistical power of our analyses, and thus findings which only approached statistical significance (e.g., the interaction of health limitations and social support in predicting Time 2 depression; Table 4), could emerge as more analytically substantial with a larger sample of grandparent caregivers. Despite this lack of power, we did find (a) social support to predict health over time (Table 3), (b) the interaction of overall health and social support to predict depression over time (Table 4), and (c) the interaction between social support and parental stress to predict depression over time (Table 5).

Additionally, data were self-report, and may not mirror objective health assessments, such assessments relative to age peers, or measures of enacted social support; the actual use of needed healthcare services might also influence self-estimates of health. Moreover, lacking a reliable measure of formal support from healthcare professionals or social workers, we could not ascertain its relationship to health over time. Additionally, grandparents may underestimate their own health concerns in attending to their grandchildren. Future work might also explore indirect indicators of physical health. In this respect, Zauszniewski, Au, and Musil (2013) found biofeedback targeting heart rate variability to lessen stress and depression in a small sample ($n = 20$) of caregiving grandmothers.

These limitations not withstanding, the longitudinal findings here suggest that adequate social support may lay the groundwork for better health over time among grandparent caregivers, and that worse health in concert with less social support may predispose such persons to more depression over time. Likewise, greater parental stress in concert with less social support leaves one open to more depression, whereas greater social support lessens depression among those under greater parental stress, reflecting the protective role of social support in this respect. As grandparents' and grandchildren's physical/mental health are intertwined, the provision of social support may not only directly affect the well-being of the grandparent, but also indirectly impact that of the grandchild.

Acknowledgments

The authors thank the Editor of the *Journals of Gerontology Series B; Social Sciences* and the anonymous reviewers for their helpful comments, as well as the grandparent caregivers who so willingly gave of their time to participate in the study.

Author Contributions

B. Hayslip conceptualized the study, collected the data, and contributed in writing the manuscript; H. Blumenthal was responsible for data analyses and contributed in co-writing the manuscript; A. Garner assisted in conducting the literature review.

References

Abidin, R. R. (1990). *Parenting Stress Index/Short Form*. Lutz, FL: Psychological Assessment Resources.

Aldwin, C., Spiro A., III, & Park, C. (2006). Health, behavior, and optimal aging: A life-span developmental perspective. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (6th ed., pp. 85–104). San Diego, CA: Academic Press.

Almeida, D., Piazza, J., Stawski, R., & Klein, L. (2011). The speedometer of life: Stress, health, and aging. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology of aging* (pp. 191–206). San Diego, CA: Academic Press.

Anderson, R. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36, 1–10. doi:10.2307/2137284

Antonucci, T. (2001). Social relations: An examination of social networks, social support, and a sense of control. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (pp. 427–453). San Diego, CA: Academic Press.

Antonucci, T., Birditt, K., & Akiyama, H. (2009). Convoys of social relations: An interdisciplinary approach. In V. Bengtson, D. Gans, N. Putney, & M. Silverstein (Eds.). *Handbook of theories of aging* (pp. 247–260). New York: Springer.

Baker, L., & Silverstein, M. (2008). Preventative health behaviors among grandmothers raising grandchildren. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 63, S304–S311. doi:10.1093/geronb/63.5.s304

Barusch, A., & Wilby, F. (2010). Coping with symptoms of depression: A descriptive study of community-dwelling elders. *Clinical Gerontologist*, 33, 210–233. doi:10.1080/07317111003773650

Chen, F., & Liu, G. (2012). The health implications of caring for grandchildren in China. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 67, 99–112. doi:10.1093/geronb/gbr132

Clara, I. P., Cox, B. J., Enns, M. W., Murray, L. T., & Torgrudc, L. J. (2003). Confirmatory factor analysis of the multidimensional scale of perceived social support in clinically distressed and student samples. *Journal of Personality Assessment*, 81, 265–270. doi: 10.1207/s15327752jpa8103_09

Dahlem, N. W., Zimet, G. D., & Walker, R. R. (1991). The multidimensional scale of perceived social support: A confirmation study. *Journal of Clinical Psychology*, 47, 756–761. doi: 10.1002/1097-4679(199111)47:6<756::AID-JCLP2270470605>3.0.CO;2-L

Dolbin-McNab, M., Roberto, K., & Finney, J. (2013). Formal social support: Promoting resilience among grandparents raising grandchildren. In B. Hayslip & G. Smith (Eds.), *Resilient grandparent caregivers: A strengths-based perspective* (pp. 134–151). New York: Routledge.

Dowdell, E. B. (1995). Caregiver burden: Grandmothers raising their high risk grandchildren. *Journal of Psychosocial Nursing*, 33, 27–30.

Eisdorfer, C., & Wilkie, F. (1977). Stress, disease, aging, and behavior. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (1st ed., pp. 251–275). New York: Van Nostrand Reinhold.

Fruhauf, C., & Bundy-Fazioli, K. (2013). Grandparent caregivers' self-care practice: Moving toward a strengths-based approach. In B. Hayslip & G. Smith (Eds.). *Resilient grandparent caregivers: A strengths-based perspective* (pp. 88–102). New York: Routledge.

Gallagher, D., & Thompson, L. (2007). Evidence-based treatments for distress in family caregivers of older adults. *Psychology and Aging*, 22, 37–51. doi:10.1037/0882-7974.22.1.37

Grundy, E., Albala, C., Allen, E., Dangour, A., Elboume, D., & Uauy, R. (2012). Grandparenting and psychosocial health among older Chileans: A longitudinal analysis. *Aging and Mental Health*, 16, 1047–1057. doi:10.1080/13607863.2012.692766

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York: Guilford.

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, 41, 924–936. doi:10.3758/BRM.41.3.924

Hayslip, B., & Glover, R. (2008). Traditional grandparents' views of their caregiving peers' parenting skills: Complimentary or critical? In B. Hayslip & P. Kaminiski (Eds.), *Parenting the custodial grandchild: Implications for clinical practice* (pp. 149–164). New York: Springer.

Hayslip, B., Davis, S., Goodman, C., Smith, G. C., Neumann, C., Maiden, R., & Carr, G. (2013). The role of resilience in understanding grandparents raising their grandchildren. In B. Hayslip & G. Smith (Eds.), *Resilient grandparent caregivers: A strengths-based perspective* (pp. 48–67). New York: Routledge.

Hayslip, B., & Kaminski, P. (2005). Grandparents raising their grandchildren: A review of the literature and suggestions for practice. *The Gerontologist*, 45, 262–269. doi:10.1093/geront/45.2.262

Hayslip, B., Shore, R. J., & Emick, M. (2006). Age, health, and custodial grandparenting. In B. Hayslip & J. Hicks-Patrick (Eds.), *Custodial grandparents: Individual, cultural, and ethnic diversity* (pp. 75–88). New York: Springer.

Hayslip, B., Shore, R. J., Henderson, C. E., & Lambert, P. L. (1998). Custodial grandparenting and grandchildren with problems: Their impact on role satisfaction and role meaning. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 53, S164–S174. doi:10.1093/geronb/53b.3.s164

Hayslip, B., & Smith, G. (2013). *Resilient grandparent caregivers: A strengths-based approach*. New York: Routledge.

Hughes, M. E., Waite, L. J., LaPierre, T. A., & Luo, Y. (2007). All in the family: The impact of caring for grandchildren on grandparents' health. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 62, S108–S119. doi:10.1093/geronb/62.2.s108

Jendrek, M. P. (1993). Grandparents who parent their grandchildren: Effects of lifestyle. *Journal of Marriage and the Family*, 55, 609–621. doi:10.2307/353342

Kenny, D. A. (1975). Cross-lagged panel correlation: A test for spuriousness. *Psychological Bulletin*, 82, 887–903. doi:10.1037//0033-2909.82.6.887

Kenny, D. A., & Harackiewicz, J. M. (1979). Cross-lagged panel correlation: Practice and promise. *Journal of Applied Psychology*, 64, 372–379. doi:10.1037//0021-9010.64.4.372

Kohn, S., & Smith, G. (2006). Social support among custodial grandparents in a variety of contexts. In B. Hayslip & J. Hicks-Patrick (Eds.), *Custodial grandparents: Individual, cultural, and ethnic diversity* (pp. 199–224). New York: Springer.

Lewinsohn, P. M., Rohde, P., Seeley, J. R., & Fischer, S. A. (1991). Age and depression: unique and shared effects. *Psychology and Aging*, 6, 247–260. doi:10.1037//0882-7974.6.2.247

Li-Jung, E., Ku, S., Stearns, C., Van Houtven, C., Lee, S., Dilworth-Anderson, P., & Konrad, T. (2013). Impact of caring for grandchildren on the health of grandparents in Taiwan. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 68, 1009–1021. doi:10.1093/geronb/gbt090

Locascio, J. L. (1982). The cross-lagged panel correlation technique: Reconsideration in terms of exploratory utility, assumption specification, and robustness. *Educational and Psychological Measurement*, 42, 1023–1037. doi:10.1177/001316448204200409

Meng, X., Rosenthal, R., & Rubin, D. B. (1992) Comparing correlated correlation coefficients. *Psychological Bulletin*, 111, 172–175. doi:10.1037//0033-2909.111.1.172

Minkler, M., & Fuller-Thomson, E. (1999). The health of grandparents raising grandchildren: Results of a national study. *American Journal of Public Health*, 89, 1384–1389.doi:10.2105/ajph.89.9.1384

Musil, C. M., & Ahmad, M. (2002). Health of grandmothers: A comparison by caregiver status. *Journal of Aging and Health*, 14, 96–121. doi:10.1177/089826430201400106

Musil, C. M., Gordon, N., Warner, C., Zauszniewski, J., Standing, T., & Wykie, M. (2011). Grandmothers and caregiving to grandchildren: Continuity, change, and outcomes over 24 months. *The Gerontologist*, 51, 86–100. doi:10.1093/geront/gnq061

Musil, C. M., Warner, C., Zauszniewski, J., Wykle, M., & Standing, T. (2013). Grandmother caregiving, family stress and strain, and depressive symptoms. *Western Journal of Nursing Research*, 31, 389–408. doi:10.1177/0193945908328262

Neely-Barnes, S. L., Graff, J. C., & Washington, G. (2010). The health-related quality of life of custodial grandparents. *Health & Social Work*, 35, 87–97. doi:10.1093/hsw/35.2.87

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401. doi:10.1177/014662167700100306

Rogosa, D. (1980). A critique of cross lagged correlation. *Psychological Bulletin*, 82, 887–903. doi:10.1037/0033-2909.88.2.245

Roberto, K., Dolbin-McNab, M., & Finney, J. (2008). Promoting the health of grandmothers parenting young grandchildren. In B. Hayslip & P. Kaminski (Eds.), *Parenting the custodial grandchild: Implications for clinical practice* (pp. 75–89). New York: Springer.

Smith, G. C., Palmieri, P. A., Hancock, G. R., & Richardson, R. A. (2008). Custodial grandmothers' psychological distress, dysfunctional parenting, and grandchildren's adjustment. *International Journal of Aging & Human Development*, 67, 327–367. doi: 10.2190/ag.67.4.c

Wahl, H. W. (2001). Environmental influences on aging and behavior. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (5th ed., pp. 215–237). San Diego, CA: Academic Press.

Ware, J. E., Snow, K. K., Kosinski, M., & Gandek, B. (1993). *SF-36 Health Survey: Manual and Interpretation Guide*. Boston, MA: The Health Institute, New England Medical Center.

Wohl, E., Lahner, J., & Jooste, J. (2003). Group processes among among grandparents raising grandchildren. In B. Hayslip & J. Patrick (Eds.), *Working with custodial grandparents* (pp. 195–212). New York: Springer.

Wong, J. J., Gonzales, N. A., Montaño, Z., Dumka, L., & Millsap, R. E. (2014). Parenting intervention effects on parental depressive symptoms: Examining the role of parenting and child behavior. *Journal of Family Psychology*, 28, 267–277. doi:10.1037/a0036622

Zauszniewski, J., Au, T., & Musil, C. M. (2013). Heart rate variability biofeedback in grandmothers raising grandchildren: Effects on stress, emotions, and cognitions. *Biofeedback*, 41, 144–149. doi:10.5298/1081-5937-41.3.06

Zimet, G., Dahlem, N., Zimet, S., & Farley, G. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52, 30–41. doi:10.1207/s15327752jpa5201_2