Mental Health Stress, Family Resources and Psychological Distress: A Longitudinal Mediation Analysis in African American Grandmothers Raising Grandchildren

Deborah M. Whitley,1 Dorian A. Lamis,3 and Susan J. Kelley2

1School of Social Work, Andrew Young School of Policy Studies
2Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University, Atlanta, GA
3Emory University School of Medicine, Department of Psychiatry and Behavioral Sciences/Grady Health System, Atlanta, GA

Objectives: This study examines the effectiveness of a multidisciplinary intervention for African American grandmothers raising grandchildren on the relationship between dichotomized levels of mental health stress (low vs. high) and elevated levels of psychological distress, mediated by perceptions of family resources. Method: A nonrandom sample of African American grandmothers (N = 679) was assessed to test the predictive relations among study constructs in the context of a prospective mediational model. Results: Perception of family resources contributes to lower psychological distress among custodial grandmothers exhibiting low and high levels of mental health stress. There was no significant difference in the strength of the mediated effects between the 2 mental health stress groups. Conclusion: The findings suggest appropriate resource-focused interventions can enhance grandmothers’ subjective assessments of family resources and reduce psychological distress. However, additional research is needed to ascertain the consistency and generalizability of findings.

Introduction

Approximately 2.7 million grandparents across the nation are raising grandchildren in parent-absent households; 63% are grandmothers responsible for providing all of their grandchildren’s basic living requirements (U.S. Census, 2013). However, in doing so, many of them carry significant burdens necessitating multiple resources to meet family needs. When family demands are unmet, many grandfathers experience intense stressors, potentially leading to episodes of severe psychological distress (Smith, Palmieri, Hancock, & Richardson, 2008). In this study, we examined the effectiveness of an ongoing, multidisciplinary 12-month intervention on the relationship between mental health functioning and elevated levels of psychological distress among African American grandmothers raising grandchildren. The intervention promotes access to an array of health and social services to participating families. Specifically, we investigated perceptions of family resources as a potential mediator in the association between mental health functioning and psychological distress of grandmothers with low versus high mental health stress. Dichotomizing mental health stress levels for grandmother caregivers allows a more definitive assessment of the intervention’s effects on psychological distress.
Literature Review

An expanding body of literature has described the circumstances that heighten stress levels experienced by custodial grandparents (Burnette, 2000; Emick & Hayslip, 1999; Sands & Goldberg-Glen, 2000). Leading factors are as follows: raising multiple grandchildren with special needs in a single household (Musil & Ahmad, 2002); economic insecurity (Ross & Aday, 2006; Baker & Metchler, 2010); inadequate housing (Fuller-Thomson & Minkler, 2003); legal concerns (Van Etten & Gautam, 2012); social isolation (Kelley, Whitley, Sipe, & Yorker, 2000); marital conflict (Smith & Hancock, 2010); role dissatisfaction (Hayslip, Shore, Henderson, & Lambert, 1998); and overall life dissatisfaction (Goodman, 2012). Additional stress factors include the emotional distance between the biological parents and the grandparents, creating familial conflict within households (Leder, Grinstead, & Torres, 2007; Musil & Standing, 2005; Sands & Goldberg-Glen, 2000). Researchers also note some grandparents are responsible for raising grandchildren with significant physical, behavioral, and emotional problems stemming from exposure to various forms of family or community violence (Janicki, McCallion, Grand-Griffin, & Kolomer, 2000).

Other grandchildren may experience severe developmental delays related to prenatal exposure to toxic substances, which present challenging behaviors and academic problems that grandparents find difficult to manage (Edwards & Daire, 2006; Force, Botsford, Pisano, & Holbert, 2000; Whitley & Kelley, 2008). These children often require special education and medical services that many grandparents have little or no knowledge, which enhances feelings of uncertainty and anxiety (Whitley, Kelley, & Campos, 2011; Smith & Palmieri, 2007). Moreover, the grandparents’ declining physical health due to normal aging effects exacerbates many of these challenges with their grandchildren.

Another line of research examines the individual characteristics of grandparents who report experiencing mental health stress and depression as manifestations of psychological well-being (Kelley, et al., 2000; Minkler, Fuller-Thomson, Miller, & Driver, 2000; Musil, Warner, Zauszniewski, Wykle, & Standing, 2009). Based on results from earlier studies, there are distinct social attributes of custodial grandparents that increase risks for depression. Race (Carr, Hayslip, & Gray, 2012), gender and marital status (Smith & Hancock, 2010), education and income levels (Kelley, Whitley, & Campos, 2013), and caregiving status (Musil et al., 2009) are leading risk factors for poor psychological outcomes. Thus, a grandmother of color who is economically insecure, aged 55 years or younger, unmarried, with low education achievement, and raising grandchildren with limited social supports and resources is more likely to experience mental health stress and depression than her counterpart. Left unmanaged, grandparents may demonstrate poor parenting skills and become inattentive to the needs of their grandchildren, who likely have experienced previous episodes of trauma and loss (Smith & Palmieri, 2007).

Researchers have examined the various ways grandparents cope with stress associated with their parenting responsibilities. Several studies have focused on the utility of social support and family resources to manage negative emotions. Gerard, Landry-Meyer, and Roe (2006) define social support as the “emotional, instrumental and informational support received from others” (p. 361). According to the literature, subjective and instrumental social supports are leading concepts that affect emotional well-being (Kelley, et al., 2000; Moore & Miller, 2007; Musil, Jeanblanc, Burant, Zauszniewski, & Warner, 2013). Evidence has shown that social support given to grandparents is important to their positive physical and mental health functioning and contributes to reduced psychological distress (Hayslip & Kamaniski, 2005; Hughes, Waite, LaPierre, & Lou, 2007).

In addition, the subjective assessment of family resources is another factor that appears to affect psychological well-being. Researchers define family resources as “those instrumental resources that are essential for raising children and include income, food, shelter, and access to health care” (Kelley et al., 2000, p. 313). Believing such resources are unavailable or inadequate raises emotional stress and, ultimately, the risk for diminished psychological well-being. Kelley and colleagues (2000) used a subjective assessment of family resources and social support as important factors to test the efficacy of a multidisciplinary intervention on psychological distress with 102 grandparent caregivers. Grandparents’ perceptions of family resources correlated with psychological distress, whereas social support did not. The authors’ findings revealed grand-
parents who reported better family resources and physical health also had lower psychological distress following participation in the program.

Following up on the 2000 study and using a larger sample of 480 grandmothers, Kelley et al. (2013) examined the effect of grandchild internalizing and externalizing behaviors as predictors of psychological distress. The analysis also included perceptions of family resources and social support. The results indicated that grandchildren’s behaviors, younger age, and poor physical health of grandparents as well as the perceived inadequacy of family resources explained elevated psychological distress. Social support, again, was not a significant factor.

Considering the consistent findings about family resources in our earlier works, and the potential utility for enhancing resource assessments with psychological well-being, our next step is to prospectively examine the efficacy of the intervention with family resources as a potential mediator of the association between mental health functioning and subsequent psychological distress using a longitudinal structural equation model (SEM).

**Intervention Description Overview**

*Theoretical Perspectives*

The intervention tested in the current study uses McCubbin, Thompson, Futrell, and McCubbin's (1997) model of family stress, adjustment, and adaptation. The model provides a framework for explaining how families manage life pressures by attending to psychological risk levels associated with internal stressors (e.g., number of grandchildren in household, severity of trauma experienced by grandchildren, simultaneous caregiving other relatives by grandparent) and external stressors (e.g., unavailable services or resources to meet family needs). Accordingly, our general assumption is access to personal, familial, or community resources can reduce or minimize stress levels to the family's advantage and support positive adjustment or adaptation. Conversely, lack of access to or knowledge about potential resources can intensify or exacerbate individual stress levels and psychological distress.

*Service Content Description*

The grandmothers in the study participated in a 12-month program designed to improve their social, physical, and emotional well-being. Criteria for voluntary enrollment in the program included (a) birth parents were absent from the household and (b) grandchildren were aged 16 years or younger; all participants lived within a 20-mile radius of the program site. For the purposes of this study, we viewed the grandmothers as caregivers because they were responsible for providing the direct care related to raising their grandchildren due to parental maltreatment, neglect, and loss. The general purpose of the intervention was to give custodial grandmothers access to multidisciplinary services that met identified family priorities. Service providers incorporated a strengths-based approach in their practice strategies while adhering to service protocols found in program training manuals. Strengths-based practices promote collaborative problem solving between grandparents and service providers (Saleeby, 1997). The intervention's core service components are detailed below.

*Case Management (12 Months Only)*

*Social work.* A social worker conducted a minimum of one home visit per month for each enrolled family. During the visits, the grandparents identified specific family challenges, as well as recognizing personal, familial, and community strengths. The social workers facilitated the problem-solving process by which the grandparents participated in developing an action plan for meeting family concerns. If they needed immediate material aid (e.g., clothing, furniture, toys, food) to meet family needs, then the social workers either provided a listing of community agencies for grandparents to contact directly or assisted in contacting the agencies for them. In many cases, social workers facilitated their first access to major public welfare benefits (e.g., Temporary Assistance for Needy Families, Supplemental Nutrition Assistance Program, and energy assistance to meet financial shortages).
Nursing. Registered nurses attended to the physical health needs of the grandparents and grandchildren. Conducting a minimum of one home visit per month, nurses monitored the grandmother’s physical health indicators (e.g., blood pressure, weight, cholesterol and glucose levels), reviewed prescription medications, and promoted self-care management of chronic diseases (e.g., diabetes, hypertension). The nurses also assessed the grandchildren’s health for normal physical growth and development and provided referrals to primary care health services or specialists, as necessary.

Monthly group meetings. Grandparents could attend two group meetings per month: support groups and parent education classes. However, there was no prescribed expectation regarding meeting attendance because some grandparents had employment or multiple caregiving obligations, or they had limited capacity to travel because of physical disabilities. Facilitated by a social worker, the group meetings occurred once per month at a central location. The grandparents contributed ideas for discussion topics, which enhanced the relevancy of the meetings for them. The group meetings not only served as a resource for information but also provided respite. The group sessions gave them opportunities to take some time away from caregiving duties, socialize with other peers, share experiences, and exchange ideas. All group meetings were open to the grandparents beyond the 12-month period. The program provided transportation to participants to facilitate meeting attendance.

Legal referrals. An essential component of the intervention was giving grandparents access to information about establishing a legal relationship with their grandchildren. Social workers initiated referrals to local legal services for consultations. The local legal aid society and private law firms affiliated with the program were available to provide consultation with the grandmothers about temporary or permanent child custody, adoption, termination of parental rights, and other legal matters involving the grandchildren.

As noted, the grandmothers were offered 12 months of multidisciplinary services. Only the monthly home visits by nurses and social workers were mandatory for program participation. The amount of time for each home visit varied according to family needs but on average, the visits were scheduled for one hour per family. There was no prescribed frequency for attending any group meetings; attendance at the meetings varied by topic, with an average of 10 to 12 participants per meeting. Grandmothers attended or received other services according to their own interests or perceived needs.

Purpose and Hypotheses

The study’s aim was to ascertain the effectiveness of the described intervention on low versus high levels of mental health stress and psychological distress among African American grandmothers raising grandchildren. The perception of family resources was a potential mediator between mental health stress and psychological distress. We anticipated that a better understanding of the interplay among these variables would have implications for improved mental health well-being among African American grandmothers. Based on the resiliency model of family stress, adjustment, and adaptation (McCubbin et al., 1997) and our previous research (Kelley et al., 2011; Kelley et al., 2013; Kelley, 2000), we expected diminished mental health functioning to be associated with low perceptions of family resources, in turn contributing to elevated levels of psychological distress, after adjusting for important demographic and background variables.

Because all grandmothers participated in the intervention, we hypothesized its effect accordingly:

- Compared with grandmothers experiencing high levels of mental health stress, grandmothers in the low mental health stress group would have lower levels of mental health functioning at baseline and less psychological distress at both baseline and 12-month follow-up, and significantly more family resources at both time points.
• Higher levels of baseline mental health functioning would predict more perceived family resources and less psychological distress at 12-month follow-up in grandmothers with both low and high levels of mental health stress.
• More perceived family resources would predict less psychological distress at 12-month follow-up in both mental health stress groups.
• Perceptions of family resources would significantly mediate the association between baseline mental health functioning and 12-month psychological distress in both mental health stress groups.
• Given that family resources are found to mediate the association between baseline mental health functioning and 12-month psychological distress in both groups, it is expected that the mediated effect will be larger for those with high levels of mental health stress than for those with low levels of mental health stress.

Method

Participant Recruitment

Participants were recruited from community agencies serving children and families in a large southeastern United States metropolitan area. To be eligible for enrollment in this study, participants had to provide full-time parenting to one or more grandchildren who were between the ages of 18 months and 16 years. Families with coresiding birth parents in the household were ineligible for the study. Given there were very few grandfathers in the study sample, they were excluded from all analyses. Participants needed to reside within 20 miles of the researchers’ university, which is located in a major city in the southeastern United States. The study enrolled approximately 30-40 custodial grandmothers during any 12-month period; each month 2-3 families, on average, entered and exited the study to allow for continuous enrollment.

The methods for recruiting the families included soliciting referrals from local aging and child welfare agencies, self-referrals on the research website, distribution of printed announcements to various community sites, and informal recruitment from grandparent ambassadors—former participants who told other grandparents about the research study and its services. Over the life of the program, of the 740 families that were recruited and enrolled in the study, less than 10% have withdrawn. Those who dropped out of the study do so for such reasons as grandchildren returned to the care of the birth parents, grandparents moved out of the service area, illness or death of the caregiving grandparent, or scheduling difficulties for home visits.

Procedure

We examined baseline and 12-month data from a study investigating the effectiveness of a resource-focused intervention to enhance the mental and physical health of grandparent caregivers. Grandmothers signed informed consent letters as part of the research protocol approved by the university’s institutional review board. We explained the research study to the grandmothers; no one meeting the study criteria refused to participate in the project. Trained graduate students collected data in the participants’ homes before initiation of the intervention and 12 months after the intervention was complete. Personnel who provided intervention services to families did not participate in the data collection process. Because of the relatively low educational level of the sample, the data collectors read all questionnaires to participants. As compensation for their time, participants received $40.

Participants

The sample comprised of 679 grandmothers who were between the ages of 33 and 83 (mean \( M = 55.76 \), standard deviation \( SD = 8.78 \)). Participants of any gender, socioeconomic status, and racial and ethnic group were eligible for the study; however, given that almost all participants were African American women (98.5%), we excluded other racial and ethnic groups from the study. The sample included 238 (35.1%) grandmothers who were raising only one grandchild.
and 441 (64.9%) grandmothers who were raising more than one grandchild, with the mean number of grandchildren in their care of 2.42 ($SD = 1.53$) and range from 1 to 8. Regarding education, 273 (40.2%) did not graduate from high school, whereas 406 (59.8%) obtained their high school diploma. Regarding employment, 279 (41.1%) reported they were employed and 400 (58.9%) reported either unemployed or retired. Given that grandmother’s age, education level (did not obtain high school diploma vs. high school graduate), employment status (currently employed/not employed), and number of grandchildren may potentially affect the psychological well-being of caregivers, we included these variables as covariates in the analyses.

**Measures**

Two assessment points, baseline and 12-month data, were analyzed to determine the effectiveness of a community-based intervention to enhance the mental and physical health of grandparent caregivers. [For a complete description of the intervention service, see Kelley, Yorker, Whitley, & Sipe, 2001 or Whitley, White, Kelley, & Yorker, 1999]. Below are the descriptions of measures used in the assessments.

**The Short Form-36 General Health Survey (SF-36; Ware, 1993).** The SF-36 is a 36-item self-report instrument, administered at baseline, measuring physical and mental health functioning within the past 4 weeks (Ware, 1999). Specifically, the SF-36 comprises eight subscales: Physical Health, Role Limitations Due to Physical Problems, Social Functioning, Bodily Pain, Mental Health Stress, Role Limitations Due to Emotional Problems, Vitality, and General Health Perceptions. These eight scales of the SF-36 can be summarized into Physical Component Summary (PCS) and Mental Component Summary (MCS) scores (McHorney, Ware, & Raczek, 1993; Ware & Kosinski, 2001; Ware, Kosinski, Bayliss, & McHorney, 1995).

For the purposes of the current study, the MCS was used in all analyses to measure mental health functioning. The MCS employs both Likert scale and dichotomous formats and yields total scores ranging from 0 to 70, with higher scores indicating higher levels of mental health functioning (Ware & Gandek, 1998; Ware & Kosinski, 2001). The MCS comprises 14 items on Vitality (four items), Mental Health Stress (five items; $\alpha = .81$ in full sample), Social Functioning (two items), and Role Limitations Due to Emotional Problems (three items) subscales, which were combined to produce the total MCS score.

The Vitality subscale items assessing energy level and fatigue (e.g., “Did you feel full of pep?”) and the Mental Health Stress items assessing mental health dimensions known to contribute to stress (e.g., “Have you felt calm and peaceful?”) were measured using a 6-point Likert scale ranging from 1 (all of the time) to 6 (none of the time).

The items on the Social Functioning subscale examining the effect of psychological problems on social activities (e.g., “How much of the time has your emotional problems interfered with your social activities”) were assessed on a 5-point Likert scale ranging from 1 (all of the time) to 5 (none of the time). The role limitation items evaluating the potential contributory role of emotional problems in limiting occupational and/or routine daily function (e.g., “Have emotional problems resulted in you cutting down on the amount of time you spent on work or other activities”) were dichotomously (yes/no) assessed (Ware et al., 1993).

The MCS has been used successfully in various samples and has demonstrated good internal consistency reliability (DeBerard & Masters, 2014; Hu, 2007; Mishra, Hockey, & Dobson, 2014; Ware & Gandek, 1998). In the current study, a median split of 24 was used to dichotomize the sample into low versus high groups. Using the median, estimates of internal consistency reliability for the MCS at baseline in grandmothers with low and high mental health stress were .70 and .81, respectively.

**The Family Resource Scale (FRS; Dunst & Leet, 1987).** The FRS was administered at baseline and 12-month follow-up as an assessment of the grandmother’s perception of available resources across a range of areas. The measure comprises 31 items and uses a 5-point Likert response format. Summed items determined the total score, with higher scores signifying better access to resources and potential scores ranging from 31 to 155. Responses range from not at
all adequate to almost always adequate. A response of does not apply is also permissible. Items represent money (e.g., money to save), basic needs (e.g., enough clothes for your family), time for self (e.g., time to get enough rest or sleep), and time for family (e.g., time to be with your child/children (Van Horn, Bellis, & Snyder, 2001).

The scale is reliable and valid for use with low-income families (Kelley et al., 2000). The internal consistency reliability coefficients for the FRS among grandmothers with low mental health stress at baseline and 12-month follow-up were .85 and .83, respectively. The reliability coefficients in grandmothers with high mental health stress were .86 and .85 at baseline and 12-month follow-up, respectively.

The Brief Symptom Inventory (BSI; Derogatis & Savitz, 1999). The BSI is a 53-item self-assessment of nine psychological symptom dimensions, which was administered at baseline and again at 12-month follow-up. The nine symptom dimensions of the BSI are as follows: (a) Somatization (discomfort from impressions of physical dysfunction); (b) Obsessive-Compulsive (focus on thoughts and actions that seem incessant and undesirable); (c) Interpersonal-Sensitivity (experience of personal inadequacy); (d) Depression (signs of clinical depression); (e) Anxiety (including tenseness and panic attacks); (f) Hostility (including angry thoughts, feelings, or actions); (g) Phobic-Anxiety (a constant fear response that is illogical and out of proportion to the stressor); (h) Paranoid Ideation (representing mistrustful behavior as a disturbed manner of thinking); and (i) Psychoticism (involving an introverted, insulated, schizoid manner of living; Derogatis & Savitz, 1999). Participants were asked to rate how much they were distressed by each symptom over the past 7 days; items were rated on a 5-point scale ranging from 0 (not at all) to 4 (extremely).

The BSI also yields a summary score, the global severity index (GSI), which indicates the overall psychological disturbance the person is currently experiencing. The GSI summary measure has demonstrated well-established psychometric properties in African American women (Chapman, Petrie, & Vines, 2012) and has been previously used specifically in African American grandmothers (Kelley et al., 2013). The internal consistency reliability coefficients for the GSI among grandmothers reporting low mental health stress at baseline and 12-month follow-up were .92 and .93, respectively. The reliability coefficients in grandmothers experiencing high mental health stress were .94 and .95 at baseline and 12-month follow-up, respectively.

Analysis Strategy

We conducted all analyses using Mplus (version 7.0; Muthén & Muthén, 1998–2012) As noted, a median split was performed to divide participants into two approximately equal groups according to their reported level of mental health stress. Specifically, according to their scores on the five-item Mental Health Stress subscale of the SF-36, grandmothers were classified as having either low mental health stress ($n = 348; \geq 24$) or high mental health stress ($n = 331; < 24$).

To compare the mental health stress groups on the demographic and primary study variables, we conducted chi-squared analyses on the dichotomous measures, and we conducted t-tests to assess differences between the two groups on continuous outcome variables. Tetrachorical correlations were computed from the bivariate normal distribution function using the full information maximum likelihood (FIML) feature in Mplus, and thus represent the best estimates of the population parameters, after adjusting for missing data (Günter & Höfler, 2006).

Both tests of the study hypotheses and mediational analyses were evaluated in a single, unsaturated, multigroup model. Specifically, we constructed a full SEM with a measurement model including exogenous covariates, which allows for an evaluation of the overall fit of the theoretical model to the data. Given the relatively large sample and as suggested by Bentler and Bonnet (Bentler, 2007; Bentler & Bonnet, 1980), the chi-square test was not used to examine the fit of the model to the observed data. However, the following goodness of fit indices were employed: the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the standardized root mean square residual (SRMR). Values greater than .95 for the CFI and TLI, values less than .06 for the RMSEA, and values...
less than .08 for the SRMR are all considered a good fit of the model to the data (Hu & Bentler, 1999; Lance, Butts, & Michels, 2006).

As recommended by Pearl (2012) and in addition to evaluating the measurement model, a multigroup SEM was selected because it can incorporate all of the hypotheses concurrently and allows for estimation of the indirect effects as well as the direct effects across two groups in one model. The test for the significance of an indirect (mediated) effect used the percentile bootstrap with 3,000 draws to generate empirical confidence intervals for the mediated paths (Hayes & Scharkow, 2013). Bootstrapping, a nonparametric resampling technique, has been shown to be robust against violations of normality and leading methodological theorists strongly recommend bootstrapping over casual step approaches to mediation (MacKinnon, 2008). In all analyses, the FIML estimation feature accommodated missing data, which employs an algorithm that uses all of the observed data to estimate and infer probable values for the individuals’ missing data (Enders, 2010; Graham & Coffman, 2012).

Given that the mediation analyses were conducted within the two mental health stress groups concurrently, we were able to compare the strengths of the indirect effects. Specifically, we assessed the comparison of strengths of the indirect effects with the one-degree of freedom Wald test, which examined whether the mediated path (the product term) from baseline mental health functioning to psychological distress via family resources was equal in the low and high mental health stress groups.

Results

Table 1 shows the means, standard deviations, ranges, and percentages missing for the demographic variables as well as the primary study variables at the two assessment points (baseline and 12-month follow-up) for grandmothers experiencing low and high levels of mental health stress separately. The percentage of grandmothers reporting being currently employed significantly differed by level of mental health stress, $\chi^2(1) = 4.17, p = .041$, with 44.3% ($n = 154$) of employed grandmothers in the low mental health group and 35.1% ($n = 116$) of employed grandmothers in the high mental health group. There were no significant differences found between the mental health stress groups on age, education level, or number of children.

With regards to the primary study variables and consistent with Hypothesis 1, compared with the grandmothers in the high mental health stress group, the grandmothers who were experiencing low levels of mental health stress reported higher levels of baseline mental health functioning, $t(669) = 27.95, p < .001$, as well as higher levels of perceived family resources at both baseline, $t(664) = 7.30, p < .001$, and 12-month follow-up, $t(552) = 5.77, p < .001$ (see Table 1). Moreover, as anticipated, the grandmothers in the high mental health stress group reported more psychological distress at baseline, $t(667) = 15.50, p < .001$, and at 12-month follow-up, $t(550) = 7.15, p < .001$, than grandmothers who were experiencing low levels of mental health stress (Table 1).

Although not specifically hypothesized, we calculated a Wald statistic for comparisons of mean differences between baseline and 12-month perceived family resources and psychological distress in the two groups of grandmothers using FIML for missing data. Among the grandmothers experiencing low levels of mental health stress, perceived family resources at baseline ($M = 101.80, SD = 18.10$) significantly increased when assessed at 12-month follow-up ($M = 108.14, SD = 16.81$; $Wn(347) = 21.07, p < .001$). Similarly, family resources at baseline ($M = 91.82, SD = 19.07$) significantly increased at the 12-month follow-up assessment ($M = 99.69, SD = 17.81$; $Wn(330) = 26.95, p < .001$) among grandmothers in the high mental health stress group. Although nearing statistical significance, psychological distress at baseline ($M = 48.62, SD = 9.29$) did not decrease at 12-month follow-up ($M = 47.27, SD = 9.44$; $Wn(347) = 5.21, p = .07$) among grandmothers in the low mental health stress group. However, among grandmothers experiencing high mental health stress, psychological distress at baseline ($M = 59.46, SD = 9.55$) significantly decreased at 12-month follow-up ($M = 55.29, SD = 10.26$; $Wn(333) = 25.85, p < .001$).

Correlation coefficients among study variables are presented in Table 2. In line with Hypothesis 2 and 3, all correlations were significant ($p < .01$) in the expected direction among
Table 1
Means, Standard Deviations, Ranges, and Percentages Missing of Study Variables

<table>
<thead>
<tr>
<th></th>
<th>Low mental health stress grandmothers (n = 348)</th>
<th>High mental health stress grandmothers (n = 331)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD) n/%</td>
<td>Range</td>
</tr>
<tr>
<td>Age</td>
<td>56.51 (9.05)</td>
<td>33–83</td>
</tr>
<tr>
<td>High school diploma (yes)</td>
<td>216/62.1%</td>
<td>–</td>
</tr>
<tr>
<td>Employment status (yes)</td>
<td>154/44.3%</td>
<td>–</td>
</tr>
<tr>
<td>Number of grandchildren</td>
<td>2.40 (1.50)</td>
<td>1–8</td>
</tr>
<tr>
<td>Baseline mental health functioning</td>
<td>57.49 (5.53)</td>
<td>42–69</td>
</tr>
</tbody>
</table>

Family resources

|                                    | Baseline | 101.83 (17.92) | 51–153 | 0.90% | 91.74 (19.13)**| 47–138 | 1.5% |
|                                    | 12-month  | 108.31 (16.89) | 62–150 | 16.1% | 99.66 (17.93)**| 46–148 | 19.6% |

Psychological distress

|                                    | Baseline | 51.35 (9.72) | 33–77  | 0.60% | 59.49 (9.46)**| 33–80  | 0.30% |
|                                    | 12-month  | 47.30 (9.45) | 33–80  | 0.60% | 55.18 (10.22)**| 33–74  | 20.2% |

Note. SD = standard deviation.
*p < .05. **p < .01.

Table 2
Intercorrelations Among Study Measures in Grandmothers With Low and High Levels of Mental Health Stress

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baseline mental health functioning</td>
<td>–</td>
<td>–.15**</td>
<td>–.33**</td>
<td>.19**</td>
<td>–.27*</td>
</tr>
<tr>
<td>2. Baseline family resources</td>
<td>.31**</td>
<td>–</td>
<td>–.15*</td>
<td>.42**</td>
<td>–.09</td>
</tr>
<tr>
<td>3. Baseline psychological distress</td>
<td>–.38**</td>
<td>–.36**</td>
<td>–</td>
<td>–.10</td>
<td>.38**</td>
</tr>
<tr>
<td>4. 12-month family resources</td>
<td>.28**</td>
<td>.60**</td>
<td>.27**</td>
<td>–</td>
<td>–.21**</td>
</tr>
<tr>
<td>5. 12-month psychological distress</td>
<td>–.31**</td>
<td>–.17**</td>
<td>.42**</td>
<td>–.30**</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. Correlations are presented above the diagonal for grandmothers with low levels of mental health stress (n = 348), and below the diagonal for grandmothers with high levels of mental health stress (n = 331).
*p < .05. **p < .01.

the grandmothers experiencing both low and high levels of mental health stress. Specifically, as anticipated, baseline mental health functioning was positively associated with perceived family resources and negatively related to levels of psychological distress at 12-month follow-up. Moreover, the perception of family resources correlated negatively with levels of psychological distress at 12-month follow-up (see Table 2).

We tested the predictive relations among the study variables in the context of the mediation model by constructing a prospective multigroup (low vs. high mental health stress) SEM, after adjusting for exogenous covariates. Results revealed that the measurement model provided a good fit to the data as assessed by the RMSEA = .048, 90% confidence interval (CI) [.000, .104]; the CFI = .994; the TLI = .908; and the SRMR = .011.
Grandmothers Experiencing Low Levels of Mental Health Stress

Among grandmothers experiencing low levels of mental health stress and consistent with Hypothesis 2 (see Figure 1 for standardized coefficients), baseline mental health functioning positively predicted 12-month perceived family resources ($b = 0.330, 95\% \text{ CI} [0.003, 0.646]$) and negatively predicted 12-month psychological distress ($b = -0.242, 95\% \text{ CI} [-0.429, -0.044]$). Furthermore, in line with Hypothesis 3, more family resources predicted less psychological distress at 12-month follow-up ($b = -0.075, 95\% \text{ CI} [-0.140, -0.014]$).

Concerning mediation, the total effect of baseline mental health functioning on 12-month psychological distress was negative and significant, with a point estimate of $-0.267 (95\% \text{ CI} [-0.450, -0.072])$ and standardized estimate of $-0.16$. As predicted in Hypothesis 4, this effect was significantly mediated by perceived family resources, $ab = -0.025, 95\% \text{ CI} [-0.069, -0.001]$ and revealed a small effect size for the indirect effect (Fritz, Taylor & MacKinnon, 2012; Preacher & Hayes, 2011). The confidence interval excluded zero, indicating a significant indirect effect of baseline mental health functioning on subsequent 12-month psychological distress via family resources, supporting the mediation hypothesis. Furthermore, the standardized effect size for the indirect effect was $-0.015 (95\% \text{ CI} [-0.035, -0.006])$, indicating that psychological distress decreases by 0.015 standard deviations for every 1 standard deviation increase in mental health functioning indirectly via perceived family resources. Thus, our results reveal that low mental health stress among grandmothers who experience higher levels of mental health functioning have more positive perceptions of family resources, which ultimately contribute to less psychological distressing symptoms.

Grandmothers Experiencing High Levels of Mental Health Stress

Consistent with Hypothesis 2, baseline mental health functioning positively predicted 12-month perceived family resources ($b = 0.255, 95\% \text{ CI} [0.038, 0.476]$) and negatively predicted 12-month psychological distress ($b = -0.158, 95\% \text{ CI} [-0.308, -0.005]$) among grandmothers experiencing high levels of mental health stress (see Figure 2). Moreover, in accordance with Hypothesis 3,
more family resources predicted less psychological distress at 12-month follow-up ($b = -0.104, 95\% \text{ CI} [-0.169, -0.032]$).

Similarly, in the group of grandmothers experiencing high mental health stress, the total effect of baseline mental health functioning on 12-month psychological distress was negative and significant, with a point estimate of $-0.185 (95\% \text{ CI} [-0.336, -0.027])$ and standardized estimate of $-0.16$. As anticipated in Hypothesis 4, this effect was significantly mediated by perceived family resources, $ab = -0.027, 95\% \text{ CI} [-0.063, -0.002]$, standardized indirect effect size, $-0.023 (95\% \text{ CI} [-0.035, -0.006])$. These findings indicate that grandmothers with high levels of mental health stress who experience increased levels of mental health functioning have more perceived family resources, contributing to less psychological distress.

Contrary to expectation in Hypothesis 5, the strengths of the mediated effects in the two mental health stress groups were not significantly different. The Wald test, $\chi^2 (1) = 0.006, p = 0.940$, revealed that the mediated effects, after accounting for several important covariates, were approximately equal. Specifically, although the standardized indirect effect size in the high mental health stress group ($a\beta = -0.023 (95\% \text{ CI} [-0.035, -0.006])$) was marginally larger than the size of the standardized indirect effect in the group with low levels of mental health stress ($a\beta = -0.015, 95\% \text{ CI} [-0.035, -0.006]$), this difference did not approach significance. Thus, the role of family resources in the relation between mental health functioning and subsequent psychological distress appears to be equally important in grandmothers with both low and high levels of mental health stress.

**Discussion**

The current study assessed the effectiveness of a resource-focused intervention on low versus high levels of mental health stress and psychological distress, mediated by grandmothers’ perceptions of family resources. Our findings are encouraging and show the potential value of using an intervention that incorporates a multidimension approach (home visitation, group meetings, and legal referrals) to affect psychological well-being. The stability of the model affecting high
levels of stress suggests the importance of family resources as part of the delivery of intervention services. Interventions that are overly prescribed or do not promote individualization in the service delivery may have less effect.

The correlation analyses showed mental health functioning is positively associated with perception of family resources, which improved over time as grandparents continued their enrollment in the program. It appears the intervention had positive effect when addressing internal stressors by giving the grandmothers access to a wide range of health and social services, in both the public and private sectors. Our results further suggest the intervention contributed to reducing psychological distress between both groups of grandmothers exhibiting stress (low vs. high). Accordingly, perception of family resources was associated with higher mental health functioning for those with low levels of stress and psychological distress, as expected. At the 12-month time point, both groups of grandmothers demonstrated lower psychological distress. However, grandmothers with high stress at baseline appeared to have benefited more from improved access to family resources, as indicated with reductions in distress, compared with grandmothers with low stress.

The finding that the strengths of the mediated effects showed no group differences between the low versus high stress levels might support the versatility of the intervention. Case management services allowed the grandmothers to identify, prioritize, and secure resources to meet individualized family needs. There is no resource “waste” by having grandmothers acquire unneeded or undesired services, which often occurs when programs have prescribed service plans. Grandmothers experiencing either stress levels likely acquired the right mix of services to meet personal needs. Not mandating attendance at group meetings also aligns with this perspective. Grandmothers attended group sessions when topics addressed their specific concerns or needs, as opposed to adhering to a rigid attendance policy.

**Practice Implications**

The grandmothers in the current study had access to a full year of interdisciplinary support services. Information was shared with them about new and existing community based resources through multiple methods, including home visit sessions, group meetings, and telephone contacts. Although our findings may not be applicable to all grandparent caregivers, practitioners may consider instituting service designs that promote access to family-based resources to affect positive mental health functioning. Our findings set the stage for considering practice interventions that help grandparents identify and procure resources to match family needs and to address psychological well-being. The findings underscore the importance of screening grandparents for mental health stress and psychological distress. The implications of stress on family caregivers are well documented in the literature (Carr et al., 2012; Goodman, Potts, & Pasztor, 2007), and our findings provide additional evidence suggesting the relevance of this association.

Based on our findings, practitioners may consider the feasibility of providing a multidisciplinary package of services, as in the described intervention. The lack of available resources, particularly in rural communities or other isolated locations may warrant a different mix of services or alternative forms of service delivery to families. Our package of services appeared to have relevancy for grandmothers residing in an urban setting. The best models of services for grandfathers raising grandchildren or young grandparents raising their own minor children while raising grandchildren are yet to be determined. It is possible each of these family groups require different service packages administered by different groups of professionals (e.g., family therapist, child behavior therapist, and geriatricians).

Information sharing about available resources occurred through multiple methods in the intervention, including home visit sessions, group meetings, and telephone contacts by service providers on behalf of grandmothers. Program staff often served as “coaches” for the grandmothers to help them prepare for scheduled appointments with other providers, including reviewing family documents (e.g., birth/death certificates, custody orders), preparing lists of questions to ask service providers, and ensuring the grandmothers maintained a list of names and contact information for all professional providers serving their families. Grandmothers also used the group meetings to exchange information about new resources or inform others about services.
found to be unsatisfactory. The benefits of this aspect of service delivery are difficult to capture independently, but we recognize them as having potential social and emotional effects of the service delivery process.

**Study Limitations**

The strength and direction of the association among the studied variables with the prescribed model are encouraging, but there are limitations in the study design that require acknowledgement. The sample participants included only African American grandmothers primarily from low-income areas, residing in a limited locality. Future studies should determine the efficacy of our results across various grandparent demographic groups including younger (< 55 years) vs. older (≥ 55 years) grandparents, grandfathers versus grandmothers, types of residences (urban vs. rural), and grandparents raising grandchildren with and without the support of spouses or other adults in the household.

Approximately 13% of the participants (n = 91) had missing information on marital status, so this variable was not included as a covariate in the analyses. One body of research suggests that marriage may buffer psychological distress for custodial grandparents (Bachman & Chase-Lansdale, 2005), but other studies suggest spouses have less positive/mixed effects on caregiver stress and strain (Jendrek, 1993; Matzek & Cooney, 2009). There is yet no definitive answer. Not having complete information on marital status potentially leaves a gap in the current model and creates room for further work.

The original study design did not include a control or comparison groups. Limited staff and resources made the feasibility of recruiting and retaining control groups over an extended time period difficult while providing comprehensive services to the treatment group simultaneously. Therefore, the results from the current study must be viewed within the context of this limitation.

Another limiting aspect of the study relates to the dosage of the intervention's core components. Slaughter et al. (2013) define service dosage as the “duration of enrollment, breadth of services, and amount of time with a case manager” (p. 1415). The specific influences of these factors on the intervention’s effect remain unclear. All participants were offered the same full intervention protocol in the 12-month timeframe. However, not all grandmothers participated in every service or received the same frequency of services. It was mandatory that they participate in the home-based case management services with the nurses and social workers. As a result, they received a minimum of 12 home visits from each provider. If required, the nurse and/or social worker provided additional contacts through home visits and/or telephone contacts to address more intense family needs.

Similarly, there were variations in attendance to support group meetings. The support group meetings or parent education meetings were not mandatory for program participation. Therefore, not all grandmothers attended the group meetings due to other commitments or responsibilities. Our insight is limited for grandmothers who attended a minimal number of group meetings versus attending every meeting. Did the service intervention have different effects for grandmothers who participated in every offered service versus grandmothers who received only case management services? Nor is there clarity about the effects of grandmothers receiving other nonprogram-based services. These noted limitations provide a context for future studies.

**Future Research Efforts**

Incorporating a control group in the research design would enhance the value of the stated results. We recently began an effort to obtain psychological measures (e.g., BSI, SF-36) from grandmothers who are on the program's wait list to compare with actual program participants. These findings may give some additional insight into the program’s effect. We, however, encourage future work to develop model designs that incorporate control/comparison groups, with random selections or assignment, as appropriate. A longitudinal design similar to Musil and colleagues’ (2013) work using three groups of grandparents—primary caregivers, multigenerational caregivers, and noncaring—measured over a 3- to 5-year period would strengthen
our findings. Learning how the mediation model holds across various caregiving groups might enhance current findings.

Another potential area for future inquiry is to discern how service dosages affect mental health outcomes, as discussed in the Study Limitations section. Only grandmothers who completed 12 months of continuous participation were included in the present analysis. However, it is not definite that one year of services is required to produce reduced mental health stress in grandmother. There may be required alternative enrollment patterns, service delivery patterns, or modified service patterns due to the occurrence of unanticipated implementation barriers or challenges. Understanding the flexibility of services offered while sustaining positive effect on outcomes is an area for future study. It is also important to learn how various individual program component dosages affect reductions in mental health stress and psychological distress.

Assessing intervention or treatment fidelity is an emerging area of research in the behavioral and social sciences. Intervention fidelity is understanding the extent to which intervention services are delivered as intended (Washington et al., 2014). This area of study can be a challenge when assessing a treatment protocol with multiple service components, such as the current intervention design. However, to translate research findings into practice strategies requires an evaluation of the intervention based on implementation factors such as staff training, participant retention practices, timing to accomplish participant goals, and service enactment/re-enactment across staff (Buckwalter et al., 2009). Exploring the effects of various implementation factors is essential to assess the value of our stated results.

Finally, new information is emerging on the association between the grandparents’ emotional state and grandchildren’s behaviors. Knowing that the grandchild’s behavior can be a source of stress for grandparents, an important question for further study should consider how services targeting grandchildren may improve or change the mental health status of caregiving grandparents. Work by Smith and colleagues (2008) explored dysfunctional parenting as a potential mediator in the association between grandparents’ psychological distress and grandchild outcomes. They suggested interventions should include family practice strategies that promote positive parent–child interaction between the grandparents and their grandchildren. A testing of our intervention with an additional service to affect grandchild behaviors, using a similar analysis model, may be a future step to assess grandparents’ mental health functioning because of changes in grandchild behaviors.

Conclusion

The steady growth of grandparents raising grandchildren warrants continued attention to testing and evaluating various support models to minimize adverse effects of caregiving on psychological well-being. The current study provides insight into a prospective mediational model that positively affected psychological distress among African American grandmothers. Continuing this line of research and implementing resource-focused services can bring many grandparents closer to providing safe and stable home environments for raising their grandchildren, with less psychological adverse effects.

References


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