

The Role of Family Functioning in the Stress Process of Dementia Caregivers: A Structural Family Framework

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Purpose: The purpose of the study was to evaluate the role of family functioning in the stress process in a sample of caregivers of dementia patients by using a structural family framework. The stress-process model of caregiver distress included family functioning as an intervening variable in the relationship between objective burden and distress. We theorized family functioning to partially mediate the relationship between objective burden and distress and to significantly account for the prediction of distress beyond well-recognized predictors. **Design and Methods:** One hundred eighty-one family caregivers from the Miami site of the Resources for Enhancing Alzheimer's Caregiver Health project participated in this study. We assessed sociodemographics, burden, depression, anxiety, and perceived health for each caregiver. We measured family functioning by using a multidimensional and observational instrument. We used structural equation modeling to assess the fit of the model for the overall sample and for different caregiver subgroups and to examine whether demographic variables affected the relationships in the model. **Results:** The results of the study indicated that family functioning significantly contributed to distress in the overall sample and partially mediated the relationship between objective burden and

distress. We also found that the stress-process model was adequately fit by the hypothesized relationships between objective burden, family functioning, and distress for the overall sample and all of the subsamples, except for wives. **Implications:** This study provides support for the structural family approach as an explanatory model for the influence of family functioning on dementia caregivers. Family structural functioning is one contributor to the caregiver stress process. This suggests that interventions targeting structural family problems may reduce caregiver distress.

Key Words: REACH, Assessment, Multidimensional, Ethnicity

Caring for a family member with dementia is a stressful experience associated with negative outcomes such as depression, anxiety, and diminished physical health (Cohen & Eisdorfer, 1988; Ory, Yee, Tennstedt, & Schulz, 2000; Schulz, Visintainer, & Williamson, 1990; Schulz & Williamson, 1994; Vitaliano, Young, & Zhang, 2004). Because some caregivers fare better than others (Zarit, Johansson, & Jarrott, 1998), researchers have sought to map the individual, contextual, and interpersonal mechanisms that influence caregiver outcomes. The stress-process model (Pearlin, Mullan, Semple & Skaff, 1990) has been the predominant organizing framework in caregiver research. This model assumes that a universe of intervening factors influences how an individual responds to stress. Some factors are resources that mitigate the negative effects of stress, thus protecting the individual from adverse consequences. Other factors magnify the effects of stress and render the individual particularly vulnerable.

The family is the most proximal and influential interpersonal context throughout the life span and clearly plays a role in caregiver stress processes.

This study was supported by a mentored scientist development grant from the National Institute on Aging (Grant K01AG00977) to Victoria Mitrani, and a grant from the National Institute on Aging and National Institute on Nursing Research (Grant V01AG13292) to Carl Eisdorfer. We express our gratitude to Monica Zarate, Brian McCabe, and the families who participated in this study.

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Moreover, evidence is mounting that family factors such as marital cohesion (Rankin, Haut, & Keefover, 2001), communication patterns (Speice, Shields, & Blieszner, 1998), conflict (Semple, 1992), boundary ambiguity (Boss, Caron, Horbal, & Mortimer, 1990), and adaptability (Deimling, Smerglia, & Schaefer, 2001; Majerovitz, 1995) are related to the emotional functioning of caregivers. Despite such cumulative support for the relevance of the family, no theoretical model elucidates the mechanisms by which the family affects the stress process of caregiving.

One theoretical framework of family functioning that can be applied to caregivers is structural family theory (Minuchin, 1974), which views the family as an organism regulated by “structures” (i.e., repetitive patterns of interaction). Structures influence the manner in which family members interact across multiple dimensions such as managing disagreements, negotiating distance or closeness, and distributing roles. According to structural theory, problematic structures are the root cause of symptoms in individual family members. Whereas some structures are inherently maladaptive (e.g., the routing of conflict through a weak or subordinate third party), others become problematic because they are obsolete, representing the family’s failure to adjust to changing circumstances. A family faced with a disruptive stressor such as dementia can either adapt in response to the changing needs of family members, thus protecting family members from experiencing negative sequelae, or fail to adapt and expose vulnerable family members to risk. This formulation maps on to the stress-process model in that the family’s structural functioning is an intervening factor that mediates the relationship between the stressors experienced by the caregiver and his or her emotional functioning.

At the Miami site of the REACH (Resources for Enhancing Alzheimer’s Caregiver Health; Eisdorfer et al., 2003) study, our team conducted a clinical trial examining the efficacy of Structural Ecosystems Therapy (SET; Mitrani, Szapocznik, & Robinson, 2000), a structural family intervention, in reducing distress among family caregivers of dementia patients. The aim of structural family therapy is to identify and correct problematic structures by observing and reshaping them as they occur in family therapy sessions. The focus is on process (i.e., how family members interact) rather than content (i.e., the issues they are dealing with). Structural family interventions have been found to be efficacious with other clinical populations (Chamberlain & Rosicky, 1995; Szapocznik et al., 2004) but had not been previously tested with dementia caregivers.

In the REACH trial, our Miami clinical team aimed to restructure family interaction patterns that were believed to contribute to caregiver distress such as emotional detachment or overinvolvement, negativity, and ineffective conflict resolution (Mitrani & Czaja, 2000). Our second aim was to strengthen protective interaction patterns such as family support, validation of the caregiver’s leadership, and collaborative decision making. We randomly assigned 225 White non-Hispanic American and Cuban American caregivers to SET, SET

augmented by a computer technology intervention that facilitated communication between caregivers and support persons, or a minimal support control condition. Caregivers in the combined family therapy and technology intervention experienced a significant reduction in depressive symptoms at the end of treatment, whereas those in the SET-only condition did not (Eisdorfer et al., 2003).

The Miami REACH trial demonstrated that a technology-enhanced structural family intervention can alleviate caregiver distress, but that the structural family therapy model should be improved. One avenue for treatment development is the identification of specific family patterns that are related to caregiver outcomes, so that family therapy can be aimed precisely at reinforcing those patterns known to be protective and restructuring those patterns known to be problematic. This was the impetus for undertaking a dementia caregiver adaptation of the Structural Family Systems Ratings (SFSR; Mitrani, Feaster, McCabe, Czaja, & Szapocznik, 2005), the measure of family functioning we used in the current study. Another approach for refining structural family interventions is a more complete understanding of the mechanisms by which family structure affects the stress process.

Our aim in the current study is to begin to test structural family theory in dementia caregiver families and expand our understanding of the role of family functioning in the caregiver stress process. We test a simple model that includes family functioning as an intervening factor in the relationship between objective burden reported by a caregiver (stressor) and the caregiver’s self-report of distress (outcome). See Figure 1 for a graphical presentation of the hypothesized stress-process model. We hypothesize that family functioning will partially mediate the relationship between objective burden and distress. We also hypothesize that family functioning will provide substantial incremental prediction of distress over and above well-established predictors and correlates of distress such as objective burden and demographic factors. Post hoc analyses of moderated mediation (Frazier, Tix, & Barron, 2004) test the fit of the model for different caregiver subgroups and examine whether demographic variables affect the relationships uncovered in the overall model.

Methods

Participants

The sample included the families of 181 caregivers (97 Cuban American and 84 non-Hispanic White American) of persons with dementia drawn from a larger sample in the Miami REACH study (c.f. Eisdorfer et al., 2003). Using common outcome measures (Schulz et al., 2003), the REACH study tested 15 well-defined interventions (9 active and 6 control group conditions) implemented at six sites (Birmingham, Boston, Memphis, Miami, Palo Alto, and Philadelphia) and assessed at four time points (baseline and 6, 12, and

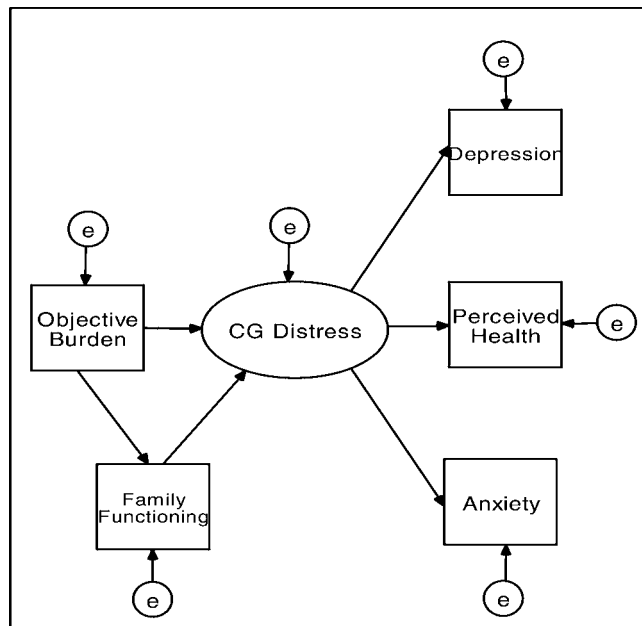


Figure 1. Stress-process model for the relationship between objective burden, family functioning, and caregiver distress. (Note that the encircled “e” terms represent the unique error associated with each variable. Variables within rectangles represent exogenous or observed variables. Caregiver distress is an unobserved variable denoted by an oval and is indicated by depression, anxiety, and perceived health. This portion of the model is also known as the measurement model.)

18 months). The interventions consisted of psychosocial or educational services, behavioral interventions, environmental modifications, and technology interventions. Family members invited to participate in the Miami study included actual or fictive kin who were identified by the caregiver. See Table 1 for a complete demographic description of the caregivers, care recipients, and their families.

Measures

We translated and backtranslated all measures into Spanish for use with Cuban Americans by using the procedure recommended by Kurtines and Szapocznik (1995). The 11-item Caregiver–Care Recipient Socio-demographic Information Form provided information on ethnicity or race, place of birth, marital status, educational attainment, place where education was completed, income, number of people living in the home, whether the caregiver moved in with care recipient to provide care, and employment.

We used the 20-item Center for Epidemiologic Studies–Depression scale (CES-D; Radloff, 1977) to measure the presence of depressive symptoms in the caregiver. The CES-D has been widely used in the mental health literature, including intervention studies with family caregivers. A score of 16 or above has been identified as discriminating between groups with clinically relevant and nonrelevant depressive symptoms (Radloff & Teri, 1986). Cronbach’s alpha for the CES-D in this sample was $\alpha = 0.88$.

Table 1. Demographic Information for Caregivers and Care Recipients

| Variable | <i>n</i> | % | <i>M</i> | <i>SD</i> | Range |
|---|----------|----|----------|-----------|-------|
| Ethnicity of CG or CR | | | | | |
| White, Non-Hispanic American | 97 | 54 | — | — | — |
| Cuban American | 84 | 46 | — | — | — |
| Mean age of CG (years) | — | — | 69.2 | 11.29 | 39–91 |
| Gender of CG | | | | | |
| Female | 130 | 72 | — | — | — |
| Male | 51 | 28 | — | — | — |
| Mean age of CR (years) | — | — | 79.7 | 7.5 | 51–95 |
| Gender of CR | | | | | |
| Female | 92 | 51 | — | — | — |
| Male | 89 | 49 | — | — | — |
| Relationship of CG to CR | | | | | |
| Wife | 79 | 44 | — | — | — |
| Husband | 45 | 25 | — | — | — |
| Daughter | 44 | 24 | — | — | — |
| Other relative | 13 | 7 | — | — | — |
| Education of CG | | | | | |
| > High school | 114 | 63 | — | — | — |
| Completed high school | 36 | 20 | — | — | — |
| < High school | 31 | 17 | — | — | — |
| Yearly family income ^a | | | | | |
| < \$30,000 | 103 | 57 | — | — | — |
| > \$30,000 | 78 | 43 | — | — | — |
| Average no. of years CG has been taking care of CR | — | — | 3.8 | 3.1 | 1–26 |
| Average no. of hours per day spent in caregiving activities | — | — | 13.8 | 7.1 | 4–24 |
| Mean score of CR on MMSE (Folstein, Folstein, & McHugh, 1975) | — | — | 13.7 | 8.0 | 0–28 |
| Mean no. of limitations on ADLs of CR (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963) | — | — | 2.6 | 2.3 | 0–6 |
| Mean no. of limitations on IADLs of CR (Lawton & Brody, 1969) | — | — | 6.4 | 2.0 | 1–8 |

Notes: CG = caregiver; CR = care recipient; MMSE = Mini-Mental State Exam; ADLs = activities of daily living; IADLs = instrumental ADLs. For the table, *n* = 181; 147 families were assessed at baseline, and 34 families had the initial assessment at one of the follow-up time points.

^aIncome was defined as the caregiver report of yearly household income before taxes, including support from children and other family.

We used the 10-item State–Trait Anxiety Inventory (STAI; Spielberger, 1979), taken directly from the State–Trait Personality Inventory (Spielberger), to measure caregiver anxiety. Respondents are asked how much they agree with statements such as “I felt calm” and “I was worried” by indicating on a 4-point Likert scale the intensity of the item. Responses range from 1 (not at all) to 4 (very much). Cronbach’s alpha for this scale in the current sample was $\alpha = 0.88$.

The Perceived Physical Health (PPH; Archbold, Stewart, Harvath, & Lucas, 1986) measure consisted of four items to assess self-perceived level of physical health in the caregiver. These items measure the respondent’s overall assessment of his or her health,

Table 2. Structural Family Systems Ratings–Dementia Caregiver Subscales

| Item Description | Task(s) on Which Item was Coded |
|--|---------------------------------|
| Enmeshment or cohesion | |
| No. of “mediated responses” (one person speaks for another person) | I |
| No. of continuations of another person’s speech | I, II |
| No. of instances of “personal control” (a person speaks authoritatively about another) | I |
| No. of simultaneous speeches | I, II |
| No. of interruptions | I, II |
| No. of instances of “loss of distance” (use of physical control) | I, II |
| No. of joint affective reactions | I, II |
| Disengagement of CR | |
| CR is not spoken to during the task | I, II |
| CR is not spoken about during the task | I |
| CR does not speak during the task | I, II |
| CR is not related to affectively during the task | I, II |
| CR does not relate affectively during the task | I, II |
| Identified patienthood | |
| No. of instances of negativity about CR or caregiving | II, III |
| No. of instances of CR or caregiving centrality | II, III |
| Conflict resolution | |
| No. of “denials” | I, III |
| No. of “avoidances” | I, III |
| No. of “diffusions” | I, III |
| No. of “emergence without resolutions” | I, III |
| No. of “emergence with resolutions” | I, III |
| Level of resolution achieved on overall task | I, II, III |
| Expressed positive affect (1–4 rating scale) | |
| Affection or positive regard rating for overall task | I, II, III |
| Levity rating for overall task | I, II, III |
| Expressed anger (1–4 rating scale) | |
| Anger rating for overall task | I, II, III |

tendency to get sick, comparison with others’ health, and the expectation of future health decline. Response options for the first item range from 1 (poor) to 5 (excellent) on a 5-point scale. The other items are statements on a 5-point scale with response options ranging from 1 (definitely true) to 5 (definitely false). The PPH measure had a Cronbach’s alpha in this sample of $\alpha = 0.75$.

The Screen for Caregiver Burden (SCB; Vitaliano, Russo, Young, Becker, & Maiuro, 1991) is a 25-item inventory that includes statements such as “My spouse doesn’t recognize me all the time” and “It is exhausting having to groom and dress my spouse every day.” The total number of items endorsed is used to measure objective burden. The SCB objective burden scale had a Cronbach’s alpha in this sample of $\alpha = 0.90$.

The Structural Family Systems Ratings–Dementia Caregiver (SFSR-DC; Mitrani, Feaster, McCabe, Czaja, & Szapocznik, 2005) is an adaptation of the SFSR (Robbins, Hervis, Mitrani, & Szapocznik, 2001; Szapocznik et al., 1991). The SFSR-DC is a multidimensional, process-oriented, and observational instrument that is based on structural family theory. The SFSR-DC uses a standardized procedure, the Wiltwick Family Tasks (Minuchin, Rosman, & Baker, 1978), for eliciting family interaction on three family exercises (planning a menu, discussing likes and dislikes about each other, and discussing a recent family argument).

Whereas the SFSR was intended to assess interactions in families with behavior-problem adolescents and has never been used with caregiver populations, the SFSR-DC was designed to measure family structures that are germane to the psychological functioning of dementia caregivers. These family interaction patterns are represented by six subscales: enmeshment–cohesion, care-recipient disengagement, identified patienthood, conflict resolution, expressed positive affect, and expressed anger. The current study is an extension of the study that developed the SFSR-DC, and it uses a subsample from that study (Mitrani et al., 2005).

To code family functioning, a trained rater observes videotapes of the family as they perform the three family tasks, and the rater notes the presence of behaviors that reflect the corresponding interaction pattern. The rater sums the behaviors that are noted within each subscale to yield the subscale score. A total of 47 indicators on the SFSR-DC represent 23 different behaviors, 3 of which are coded on only one family task, 16 of which are coded on two tasks, and 4 of which are coded on all three tasks. The subscale indicators are presented in Table 2. Table 3 shows each subscale’s composite reliability and interrater reliability, using intraclass correlation ($n = 37$). Composite reliability ranged from .691 to .974 and interrater reliability (kappa) ranged from .617 to .937 (Mitrani et al., 2005).

In the current study, we use only the SFSR-DC total score, which in the initial validation study was found to be related to caregiver depression, anxiety, and subjective burden. The total score represents an overall assessment of family functioning across multiple dimensions, which is consistent with the analytical aims of this study. To derive the total score, we convert each of the six SFSR-DC subscale scores into a 5-point category scale, with 1 indicating the least adaptive level of functioning and 5 indicating the most. We sum the six subscale scores to yield a 5- to 30-point score of total family functioning. We based our conversion of the scale scores to a 5-point scale on quintile cutoffs of each subscale’s distribution in the parent study. This conversion permits us to sum the subscale scores, which are composed of different numbers of indicators, in a manner that ascribes equal weighting to each subscale.

Procedure

SFSR-DC Rating.—A trained rater and V. Mitrani coded the family task videotapes. In the rater training, the two raters reviewed the coding manual, rated five tapes together, and rated five tapes independently; they then had meetings to reconcile discrepancies. Calibration between raters continued throughout the study. The 181 families in the current study include 147

families whose first SFSR-DC was conducted at baseline and 34 whose first SFSR-DC was at a later time point. These 34 families were enrolled in the study since baseline but had missing baseline SFSR-DC's because of unavailability of the care recipient, poor videotape quality, or breaches in administration of the family tasks.

The average number of participants in the family tasks was 3.04 ($SD = 0.727$). Although eligibility for the parent study required that a third family member (in addition to the caregiver and care recipient) be willing to participate, we administered family tasks even if no family other than the caregiver and care recipient were present. There were 36 caregiver-care recipient families in this sample. Other participants included caregivers' daughters ($n = 47$), sons ($n = 33$), husbands ($n = 22$), sisters ($n = 15$), daughters-in-law ($n = 11$), brothers ($n = 10$), sisters-in-law ($n = 8$), other extended family ($n = 28$), friends or neighbors ($n = 11$), and hired aides ($n = 3$).

Statistical Analyses

We analyzed data by using SPSS 11.5 for Windows and AMOS 5.0 software. We imputed missing data by using SPSS missing value analysis. To examine preliminary relationships between family functioning, caregiver burden, and caregiver distress, we used Pearson product-moment correlations. We evaluated the stress-process model with a structural equation model (SEM; Kline, 1998) estimated by maximum likelihood in AMOS (Arbuckle, 2003). We assessed model fit by using the model chi square value (Raykov, Tomer, & Nesselroade, 1991), the Comparative Fit Index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Joreskog & Sorbom, 1988), as suggested by Hu and Bentler (1999). We utilized a value of $CFI \geq 0.95$ and a value of $RMSEA \leq 0.08$ as criteria for acceptable fit according to Kline. The significance-level criterion for all statistical tests was $\alpha = 0.05$.

To assess whether family functioning mediated the relationship between objective burden and caregiver distress, we used the statistically powerful asymmetric distribution of products test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), which is based on the distribution of the product of the two model paths (i.e., objective burden to family functioning times family functioning to caregiver distress) that determines the mediating pathway. This procedure tests whether a significant effect of objective burden on caregiver distress works through family functioning. Finally, we used planned post hoc tests to examine overall model differences by ethnicity (Cuban American and White non-Hispanic American), relationship of caregiver to care recipient (spouse vs daughter and husband vs wife), and income (low and high) to determine if these variables were moderating the stress-process model. If the overall models were significantly different, individual paths were then tested. We provide standardized path coefficients for all subgroups as estimates of the effect sizes.

Table 3. Structural Family Systems Ratings–Dementia Caregiver Subscale Reliabilities (Mitrani et al., 2005)

| Subscale | Composite Reliability | Interrater Reliability (κ) |
|---------------------------|-----------------------|-------------------------------------|
| Enmeshment or cohesion | .780 | .838 |
| CR disengagement | .974 | .937 |
| Identified patienthood | .843 | .796 |
| Expressed positive affect | .894 | .814 |
| Expressed anger | .681 | .617 |
| Conflict resolution | — | .800 |

Note: CR = care recipient. A dash indicates that composite reliability was not calculated because items represent mutually exclusive categories.

Results

Descriptive Statistics

Means, standard deviations, and correlations for the measured variables are displayed in Table 4. The skew and kurtosis values for all variables were between -1 and $+1$, and thus we deemed them sufficiently normal. Data were minimally missing in this sample (CES-D, $n = 3$; STAI, $n = 5$; SCB, $n = 17$).

Evaluating the Stress-Process Model

A test of the overall model resulted in an acceptable fit to the data: $\chi^2(4) = 8.6$, $p < .07$; CFI = 0.98; RMSEA = 0.08. All of the path coefficients of the structural portion of the model were statistically significant. Table 5 displays the squared multiple correlation for caregiver distress, the fit indices, and the standardized path coefficients for this and all subsequent models. The asymmetric confidence interval test suggested that family functioning is a mediator of the effect of objective burden on caregiver distress (confidence interval or CI = 0.0223, 0.1362; $p < .05$).

Investigating the Unique Contribution of Family Functioning

We assessed the incremental prediction in caregiver distress provided by family functioning by evaluating the overall stress-process model with and without family functioning. With family functioning added to the model, the squared multiple correlation in caregiver distress increased from 0.09 to 0.18. Next, we evaluated the incremental contribution of family functioning, controlling for the effects of ethnicity, relationship of the caregiver to the care recipient, and income. When we included the three demographic variables in the model, family functioning still had a significant impact ($\beta = -.26$, $p < .001$) on caregiver distress and explained 6.7% of the variance in the latent variable above and beyond that predicted by objective burden and the demographic variables.

Table 4. Means, Standard Deviations, and Correlations Among Observed Variables

| Variable | M | Family Functioning | Objective Burden | Anxiety | Depression | Perceived Health |
|--------------------|------|--------------------|------------------|---------|------------|------------------|
| Family Functioning | 19.6 | 3.8 | -.17* | -.34** | -.24** | .09 |
| Objective Burden | 12.4 | | 4.3 | .29** | .23** | -.22** |
| Anxiety | 22.9 | | | 7.3 | .76** | -.40** |
| Depression | 17.6 | | | | 11.4 | -.43** |
| Perceived Health | 13.8 | | | | | 3.8 |

Notes: Standard deviations are shown on the diagonal. Scores represent higher levels of each respective construct. * $p < .05$; ** $p < .01$.

Investigating the Moderating Effects of Demographic Variables

We examined the moderating effects of ethnicity, caregiver-care recipient relationship (spouses vs daughters and husbands vs wives), and income (< \$30,000 vs ≥ \$30,000), and we determined that these variables did not moderate the stress-process relationship in this sample. Fit indices were acceptable for all subgroups except wives. To test moderation, we first determined whether the model was significantly different across the subgroups. Then, in a similar fashion, we tested individual structural paths or variances suspected of being different on visual inspection (e.g., a path was significant in one subgroup model, but the same path was nonsignificant in the other subgroup).

For ethnicity, we determined observed and measurement variances and structural parameters between White non-Hispanic Americans and Cuban Americans to be nonsignificantly different. We conducted tests for differences in two paths, objective burden to family functioning and family functioning to caregiver distress, which showed no significant differences between the two ethnic groups.

For the comparison between spouses and daughters, the overall variance and structural parameters were similar. We conducted one additional analysis to

determine if the individual path from family functioning to caregiver distress was different, but we found this path to be similar for both groups. Although the fit was acceptable for the husbands' model, it was not satisfactory for that of the wives. The measurement model and all pathways in the structural model were not statistically different between husbands and wives, but a test of the variance parameters revealed that wives were different from husbands for objective burden: $\chi^2(5) = 13.0, p = .02$. The variance of objective burden for husbands was higher (19.37) than that for wives (16.45). The path from family functioning to caregiver distress for husbands ($\beta = -.32$) was significantly different, $\chi^2(8) = 18.4, p = .02$, from the path for the wives ($\beta = -.18$).

For the low- versus high-income comparison, the variances between groups and the structural parameters were similar. We also tested the path from objective burden to caregiver distress and found it to be nonsignificantly different.

Assessing Potential Confounding Variables

Before conducting SEM analyses, we compared data from the baseline group ($n = 147$) with data from those whose first assessment was later in the study ($n = 34$). Only one of the five variables showed a significant

Table 5. Percent Variance Explained in CG Distress, SEM Fit Indices, and Beta Coefficients for All Models

| Model | Percent Variance Explained in CG Distress | SEM Fit Indices | | | | Beta Coefficients and Significance | | |
|------------------------------|---|-----------------------------|-----|-------|-------------------------|------------------------------------|-------------------------|--|
| | Squared Multiple Correlation | χ^2 (df), significance | CFI | RMSEA | SCB → SFSR-DC | SFSR-DC → CG Distress | SCB → CG Distress | |
| Overall sample | .18 | 8.6 (4), .07 | .98 | .08 | $\beta = -.17, p < .02$ | $\beta = -.30, p < .001$ | $\beta = .26, p < .001$ | |
| Cuban American | .12 | 4.0 (4), .41 | 1.0 | .00 | $\beta = -.25, p < .05$ | $\beta = -.17, p > .05$ | $\beta = .26, p < .05$ | |
| White, Non-Hispanic American | .25 | 6.0 (4), .20 | .99 | .07 | $\beta = -.13, p > .05$ | $\beta = -.36, p < .01$ | $\beta = .30, p < .01$ | |
| Spouse | .16 | 6.5 (4), .16 | .98 | .07 | $\beta = -.21, p < .05$ | $\beta = -.21, p < .05$ | $\beta = .30, p < .01$ | |
| Daughter | .26 | .43 (4), .98 | 1.0 | .00 | $\beta = -.11, p > .05$ | $\beta = -.47, p < .01$ | $\beta = .16, p > .05$ | |
| Husband | .36 | 4.8 (4), .30 | .98 | .07 | $\beta = -.02, p > .05$ | $\beta = -.29, p < .05$ | $\beta = .52, p < .01$ | |
| Wife | .10 | 13.1 (4), .01 | .89 | .17 | $\beta = -.34, p < .01$ | $\beta = -.21, p > .05$ | $\beta = .17, p > .05$ | |
| Low income | .22 | 4.4 (4), .35 | 1.0 | .03 | $\beta = -.13, p > .05$ | $\beta = -.26, p < .01$ | $\beta = .35, p < .01$ | |
| High income | .13 | 5.6 (4), .23 | .99 | .07 | $\beta = -.22, p > .05$ | $\beta = -.30, p < .01$ | $\beta = .14, p > .05$ | |

Notes: CG = caregiver; SEM = structural equation model; CFI = Comparative Fit Index; RMSEA = root mean square error of approximation; SCB = Screen for Caregiver Burden; SFSR-DC = Structural Family Systems Ratings–Dementia Caregiver.

difference. Family functioning was higher in the baseline group, $M = 19.8$, $SD = 3.9$, than it was in those families not assessed at baseline, $M = 18.4$, $SD = 3.3$, $t(179) = 2.0$, $p = .05$. To ensure that this mean difference would not confound subsequent SEM results, we compared the SEM models of the two groups. The structural paths were not different between groups. The variances, however, were different: $\chi^2(6) = 13.4$, $p = .04$. Further examination showed that only the variance of objective burden for the baseline groups (variance = 19.97; $SE = 2.34$) was significantly higher than that for the nonbaseline group: $\chi^2(1) = 6.1$, $p = .01$; variance = 9.68; $SE = 2.36$. Thus, no structural paths and only one variance term differed by time of assessment, indicating little confounding effect.

In addition to assessing time point, we also evaluated the influence of intervention group assignment on the measurement of the data. According to chi-square analysis, time point by intervention assignment was nonsignificant: $\chi^2 = .12(2)$, $p = .94$. Next, we conducted an analysis of variance with SFSR-DC score as the dependent variable and time point and intervention assignment as the independent variables. The interaction was nonsignificant, $F = .59(2, 170)$, $p = .55$, thus demonstrating that intervention assignment was not likely to confound subsequent results.

Discussion

Structural family theory can be an effective vehicle for elucidating the role of the family in caregiver stress processes because it provides a paradigm for understanding the general mechanisms by which the family affects the caregiver, and it incorporates the multidimensional nature of family experience. This study aimed to lay the groundwork for a structural family model of dementia caregiving that can be integrated into the stress-process framework. Using a multidimensional, observation-based measure of family interaction patterns, in this study we found support for a rudimentary stress-process model that incorporates family functioning. We also found that the relationship between caregiving stress and caregiver distress is partially mediated by family functioning. Finally, we found that family functioning explained an additional 6.7% of the variance in caregiver distress above and beyond that predicted by objective burden and ethnicity, income, and relationship of caregiver to care recipient.

This study suggests that interventions aimed at transforming problematic family interaction patterns and supporting protective family patterns can help to prevent or alleviate the distress that caregivers experience in response to caregiving stress. Specifically, these results support the adoption of family interventions that promote family cohesion, involvement of the care recipient in family activities, resolution of disagreements, and expressions of affection and levity; and that reduce expressed anger and negativity about the care recipient. Within a structural approach, such an intervention would focus on changing family processes regardless of content (i.e., sessions would not always

focus on caregiving issues). For example, a session could revolve around having family members plan an outing together. Having family members agree on the details of the outing could be an avenue to work on conflict resolution; gathering the family for the outing would promote cohesiveness; and planning for an outing that actively includes the care recipient would reduce care-recipient disengagement.

The finding that the stress-process model had adequate fit across nearly all of the demographic subgroups suggests that family functioning is a robust factor among a wide range of caregiver characteristics. Nonetheless, the tests of invariance within the multiple-method framework of SEM had small sample sizes, which may have resulted in insufficient power to detect moderation effects. Examining the absolute differences in standardized pathways by each comparison group (e.g., Cuban-Americans vs White non-Hispanic Americans; see Table 4) shows that a majority of the values fell between what would be considered small to medium effect sizes (Cohen, 1988), suggesting that demographic factors may be moderating the stress process involving family functioning. Moreover, we found notable differences in the amount of variance that caregiver distress accounted for by the model. The highest squared multiple correlation coefficients were for husbands (.33), daughters (.25), White non-Hispanic Americans (.25), and low-income families (.22); the lowest were for wives (.11), Cuban Americans (.12), and relatively high-income families (.15). This would indicate that additional variables may be important in determining distress for wives, Cuban Americans, and high-income caregivers that are not as relevant for the other groups.

The intersection of wives and Cuban Americans is particularly interesting given the central role that women play in Hispanic families. It is possible that this central role causes the Cuban wives to have a strong influence on their families, but that this effect is not entirely reciprocal; that is, the family is affected by the woman's distress, but they, in turn, do not have as much of an impact on her. This supposition is consistent with the comparisons of structural path coefficients in Cuban Americans versus White non-Hispanic Americans and husbands versus wives. In the Cuban and wife caregiver families, a significant coefficient is found in the pathway between objective burden and family functioning. This pathway is not significant for the White non-Hispanic American and husband caregiver families. These findings suggest that the caregiving stress experienced by the caregiver had an impact on family functioning in Cuban and wife caregiver families but not in White non-Hispanic and husband caregiver families. Conversely, the coefficients for the family functioning to caregiver distress paths are not significant for the Cuban and wife caregiver groups, but are significant for the White non-Hispanic and husband caregiver groups, suggesting that family functioning had a significant influence on caregiver distress among White non-Hispanics and husbands, but not among the Cuban and wife caregiver groups. Further research is needed to understand how family

functioning interacts with demographic characteristics, why the model is more predictive for some groups than others, and to identify the other factors that can fill in the stress-process picture for the various subgroups.

Limitations

Limitations in this study warrant caution when one is interpreting results. First, the exclusion of non-Cuban Hispanics and African Americans limits the generalizability of the findings. Another limitation related to sampling is that the definition of “family” in the parent study was deliberately left to the discretion of the caregiver, and the sample includes only those who chose to attend after being invited by the caregiver. Therefore, the family constellations are not standardized and the sample may be overrepresented by family members who have positive relationships with the caregiver. The complexity of defining who constitutes a family unit and the difficulty of recruiting all members of a family represent inherent difficulties in conducting family research. These issues are particularly complex in late-life families because of developmental transitions associated with age, such as relocations that make it difficult to include geographically distant but nevertheless influential family members, the recent losses of significant family members to death or disability, and the importance of recently formed informal kinship networks that may include neighbors and hired aides.

A further limitation associated with family definition and recruitment is that 36 families consisted of only the caregiver and care recipient. Although mediation analyses could not be conducted with such a small subsample, we did examine the psychometric properties of the SFSR-DC subscales in these two-person families. Alpha reliabilities were satisfactory for all subscales tested (conflict resolution is not amenable to this analysis because items represent mutually exclusive categories), ranging from $\alpha = 0.617$ (expressed anger) to $\alpha = 0.880$ (care-recipient disengagement). Interrater reliability ($n = 13$, from the entire sample in the parent study) was less satisfactory, however. The expressed anger ($\kappa = 0.143$) and expressed positive affect ($\kappa = 0.408$) subscales had unacceptable interrater reliability; in addition, interrater reliability could not be calculated on the care-recipient disengagement subscale because it had insufficient variability in one set of ratings. The other three subscales had kappa values ranging from $\kappa = 0.773$ (enmeshment or cohesion) to $\kappa = 0.824$ (conflict resolution). Thus, some preliminary information suggests that the SFSR-DC may be somewhat less reliable in two-person families, but further investigation is warranted.

Finally, because of the relatively small number of families and missing SFSR-DC data at later time points, the present study could only test a very simple stress-process model within a cross-sectional framework. In addition, the SFSR-DC has yet to be cross-validated, and the current study uses a subset of the sample upon which the measure was developed (Mitrani et al., 2005).

Directions for Future Research

Further research is needed to elucidate the family mechanisms of caregiver stress processes. An important area for further study is the impact of caregiving stress on the family system, and how the family responds to the ongoing changes in the caregiving needs of the care recipient. Structural theory would predict that the family will either adapt to changing needs by reorganizing itself, and thus protect individual family members; or that it will fail to adapt and therefore lead to problems in individual family members. The latter represents deterioration of family functioning as a secondary stressor that has a cascading effect on individual family members. Beyond that, we need to identify the factors that predict whether a family will successfully adjust or fail to respond in an adaptive manner.

The program of research outlined herein requires longitudinal designs that follow the family and individual caregiver's progress through the milestones of the dementia caregiving process. Such research could ultimately contribute to the development of precisely focused and theory-driven family interventions to prevent and alleviate caregiver distress. Furthermore, adding family functioning into the stress-process picture can provide knowledge regarding how family functioning moderates the effects of individual, demographic, cultural, and environmental factors that influence caregiver outcomes, thus guiding the development of interventions customized for particular segments of the dementia caregiving population.

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Received April 15, 2005

Accepted July 29, 2005

Decision Editor: Linda S. Noelker, PhD