

Mediation of Family Dynamics, Personal Strengths, and Mental Health in Dementia Caregivers

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The purpose of this study was to use structural equation modeling (SEM) to investigate the role of family dynamics and personal strengths in the mental health of dementia caregivers from Latin America. A sample of 110 dementia caregivers from Argentina completed measures of these constructs. It was hypothesized that personal strengths would mediate the relationship between family dynamics and caregiver mental health. An SEM uncovered that these constructs were all positively related, and a second SEM found extremely strong support for the study's hypothesis, as personal strengths fully mediated the relationship between family dynamics and caregiver mental health. A bivariate correlation matrix then notably found that the family dynamics variables were most associated with caregiver sense of coherence, resilience, anxiety, and satisfaction with life. The results of the current study suggest that caregiver interventions in Latin America may benefit from including family centered and cognitive-behavioral approaches as a means of boosting existing personal strengths, which in turn may have a positive effect on caregiver mental health.

Keywords: dementia caregivers, family dynamics, Latin America, mental health, personal strengths

In 2010, 35.6 million people globally had some form of dementia, with an estimated increase of 1.56 billion people by 2050, accounting for 22% of the world's population (Prince et al., 2013). Dementia has fast become a global public health concern among older adults, affecting approximately 1% of people aged 60 to 64 and increasing

dramatically to 24% to 33% among people aged 85 or older in the Western world (Blennow, de Leon, & Zetterberg, 2006). Dementia has been predominantly studied in the U.S., Europe, and Asia (Ferri et al., 2005), though little is known about low-income and middle-income countries, especially in Latin America, despite the trend that the greatest growth in dementia will occur in these countries (Libre Rodriguez et al., 2008; Wimo et al., 2013). Currently, dementia affects 8.5% of the population in Latin America, which is higher than the United States (6.5%), Western Europe (6.9%), and Eastern Asia (4.2%; Prince et al., 2013). Further, the number of older adults in Latin America is expected to increase from 50 million in 2005 to 186 million by 2050 (Saab, 2011). This is in part attributable to the increasing life expectancy in Latin America, which has gone from 51.8 in 1950 to 73.4 in 2010 (Saab, 2011).

Dementia is a neurodegenerative condition characterized by the deterioration in cognitive

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abilities, memory, and daily functioning (e.g., bathing, eating, and dressing). As the condition advances to later stages, it increasingly reduces an individual's ability to perform basic daily activities, and regular care by informal caregivers is necessary (Alzheimer's Association, 2012; Zarit & Talley, 2013). Dementia has also come to be known as a "family disease," as the majority of caregivers tend to be adult children and spouses (Zucchella, Bartolo, Pasotti, Chiappella, & Sinforiani, 2012). Time outside caregiving is typically limited, and caregiving has been associated with poor health outcomes including increased stress (Mausbach et al., 2012), caregiver guilt (Losada, Márquez-González, Peñacoba, & Romero-Moreno, 2010), lowered subjective well-being, poor physical health (Markowitz, Gutterman, Sadik, & Papadopoulos, 2003), reduced quality of life (Serrano-Aguilar et al., 2006), anxiety (Hooker, Monahan, Bowman, Frazier, & Shifren, 1998), and depression (Schulz, Boerner, Shear, Zhang, & Gitlin, 2006). Among dementia caregivers in Latin America, Arango-Lasprilla and colleagues' study (2010) found that in comparison with a healthy control group, dementia caregivers exhibited lower scores on many dimensions of health related quality of life. Additionally, dementia caregivers from Chile have reported high levels of burden and psychological distress (Slachevsky et al., 2013), whereas caregivers in Colombia exhibit depression, burden, and reduced perceived social support (Arango-Lasprilla, Moreno, Rogers, & Francis, 2009). Indeed, caring for an individual with dementia has been found to be more stressful than caregiving for individuals with other conditions (Pinquart & Sorenson, 2003).

Because of these deleterious effects, dementia caregivers typically describe their experience as "enduring stress and frustration" (Butcher, Holkup, & Buckwalter, 2001), which has come to be known as caregiver burden (Etters, Goodall, & Harrison, 2008). Problem behaviors (e.g., agitation, aggression, nighttime wandering), personality and mood changes of the individual with dementia, as well as reduced social support and prolonged caregiving have all been identified as stressful experiences that contribute to caregiver burden (Etters, Goodall, & Harrison, 2008). Burden has been well documented (Schulz, O'Brien, Bookwala, & Fleissner, 1995; Starkstein, Mizrahi, & Power, 2008)

and has been strongly associated with caregiver strain and distress (Brodaty & Hadzi-Pavlovic, 1990; Brodaty, Gresham, & Luscombe, 1997), depression and anxiety (Brodaty & Luscombe, 1998), lowered subjective well-being (Pinquart & Sorenson, 2003), and physical illness (Vitaliano et al., 1991). In Latin America, studies of dementia caregivers have identified high levels of burden in Brazil (Fialho et al., 2009), Colombia (Arango-Lasprilla et al., 2009), and Argentina (Allegrí et al., 2006). With this, caregiver burden has been associated with depression in an Argentinian sample (Allegrí et al., 2006) and even predictive of caregiver burn-out in Brazil (Truzzi et al., 2008). Relatedly, emotional exhaustion (the lack of energy and enthusiasm and the draining of one's emotional resources) has also been predictive of depression in a sample of Brazilian caregivers (Truzzi et al., 2012). Broadly, dementia caregivers have also been shown to engage in poorer coping strategies and are more likely to use prescription medication than their noncaregiver counterparts (George & Gwyther, 1986; Serrano-Aguilar et al., 2006).

Although dementia caregivers have been shown to exhibit a number of mental and physical health problems, many also experience a number of positive outcomes related to caregiving. For example, the majority of dementia caregivers report being in good health (Alzheimer's Association & National Alliance for Caregiving, 2004), report positive experiences from caregiving (Kramer, 1997), and in a sample of North American caregivers, actually indicated being free of significant distress (O'Rourke et al., 2010). In a study of Colombian dementia caregivers, about 90% of the sample indicated being satisfied or extremely satisfied with life (Arango-Lasprilla et al., 2009). Additionally, resilience—effective coping and adaptation in the face of hardship, adversity, and loss (Tugade & Frederickson, 2004)—in dementia caregivers has been associated with decreased depression (O'Rourke, et al., 2010) and good emotional and physical health (Fernández-Lansac, Crespo López, Cáceres, & Rodríguez-Poyo, 2012). Similarly, optimism—a personality feature that prompts people to expect positive outcomes in the face of adversity and hardship (Carver, Spencer, & Scheier, 1998)—has been associated in dementia caregivers with decreased stress and depression (Hooker, Monahan, Shi-

fren, & Hutchinson, 1992), less negative affect, more positive affect, and better mental health (Gottlieb & Rooney, 2004). And sense of coherence—a salutogenic (promoting health) orientation toward stressors (Antonovsky, 1987)—has been associated with lower levels of caregiver anxiety (Orgeta & Sterzo, 2013), depression (Välimäki, Vehviläinen-Julkunen, Pietilä, & Pirttilä, 2009), and burden (Andrén & Elmstahl, 2008). In two studies of dementia caregivers from Mexico and Argentina, greater personal strengths (i.e., resilience, optimism, and sense of coherence) were associated with better physical and mental health related quality of life (Trapp et al., 2015), increased satisfaction with life, and decreased burden and depression (Sutter et al., 2014). These personal strengths (i.e., resilience, optimism, and sense of coherence), therefore, may be important in better understanding caregiver mental health. In addition to these personal strengths, several studies have documented other important protective factors in dementia caregiver mental health, with one of the most robust being family dynamics. Caregivers with poor family functioning exhibit increased caregiver strain, burden (Heru, Ryan, & Iqbal, 2004; Scharlach, Li, & Dalvi, 2006), depression, and anxiety (Tremont, Davis, & Bishop, 2006), with family conflict being associated with reduced quality of care (Lieberman & Fisher, 1999), caregiver depression (Semple, 1992), and burden (Strawbridge & Wallhagen, 1991). A recent study (Sutter et al., 2014) of Colombian dementia caregivers found that less family empathy was associated with caregiver stress, and less flexibility with caregiver depression. Conversely, healthy family dynamics have been associated with reduced caregiver strain (Zarit, Reever, & Bach-Peterson, 1980), increased help to the patient (Lieberman & Fisher, 1999), and decreased caregiver burden and depression (Torossian & Ruffins, 1999).

Family dynamics are particularly important in the context of caregiving within some racial/ethnic groups (Janevic & Connell, 2001), and Latino families specifically exhibit characteristics that may influence the type of care they provide. According to a study of caregivers from the United States, Spain, and Latin America, the emphasis on the family, or *familismo*, often obligates family members to care for older adults (Losada et al., 2006) with

Argentines traditionally being involved in all aspects of caring for older adults (Mangone, 1997). Because of the high cost of nursing care and the tradition of extended families, most older family members live at home with their families, with only 15–16% of older Argentines placed in nursing homes (Mangone, 1997). Caregivers who consider nursing home placement often experience shame and guilt, especially if other family members disapprove of their decision (Dunkin & Anderson-Hanley, 1998) and perhaps as a result, Latino dementia caregivers have been shown to delay nursing home placement longer than White caregivers (Mausbach et al., 2004). In Argentina, many consider the onset of behavioral problems or memory decline as a natural feature of aging with many often confusing dementia as a sign of mental illness (Mangone, 1997). Resultantly, many caregivers are ashamed to discuss a relative experiencing dementia and tend to rely on their faith to handle related problems so are less likely to seek outside forms of care or social support (Mangone, 1997). Because of the focus on the family, Latino caregivers spend more time caregiving than other ethnic/racial groups according to a meta-analysis of family caregiving (Losada et al., 2006), and perhaps therefore exhibit higher burden (Zarit, Orr, & Zarit, 1985) and depressive symptoms (Pinquart & Sorenson, 2005) when compared with their White and Black counterparts in the United States. In a meta-analysis of family caregivers, Latinos report stronger familial commitment (Pinquart & Sorenson, 2005) and generally view caregiving as a more positive experience (Coon et al., 2004), seeing caring for older adults as a way of showing *respeto* or respect (Neary & Mahoney, 2005). Because of the strong commitment to family values, Latinos may uniquely experience and process caregiving tasks differently than caregivers from more individualistic cultures.

Despite the prevalence and projected increase of dementia in Latin America, very little research on dementia caregivers in this region has been conducted, particularly in Argentina. Despite the body of literature linking family dynamics, personal strengths, and dementia caregiver mental health to each other separately, no studies—in any global region—have examined

these relationships in a comprehensive model. Given the cultural importance of caring for family members, the support for personal strengths buffering the adverse effects of caregiving in Argentina, and the belief of dementia as a mental illness, further examination of the role of these constructs in this population is warranted. As a result, this study will test an overall hypothesized model of direct and indirect effects, as opposed to testing or predicting specific individual pathways within these larger constructs, as has been done in previous research. It is hypothesized that personal strengths will mediate the relationship between family dynamics and caregiver mental health in a sample of dementia caregivers from Argentina.

Method

Participants

Participants ($n = 110$) were caregivers of a person with dementia who were recruited from the Instituto de Neurociencias de San Lucas in Rosario, Argentina. For this study, caregivers were defined as individuals who provided active daily care for a person with dementia. Inclusion caregiver criteria indicated that the participant must be at least 18 years old, must be the primary caregiver for the person with dementia, must have been providing care for at least three months, and have no history of mental illness or neurological problems. Provision of care for the individual with dementia was confirmed via a review of medical records.

Caregiver participants were primarily female ($n = 83$) and had a mean age of 57.20 ($SD = 13.47$). The relationship to the person with dementia was predominantly spouses ($n = 54$) or children ($n = 50$), with minor representation by parents ($n = 1$), friends ($n = 1$), professional caregivers ($n = 2$), or "other" ($n = 2$). Eighty-seven participants were married, 11 were never married, six were divorced, one was widowed, with five declining to provide information. Participants, had provided care for an average of 47.09 months ($SD = 23.36$) and averaged 62.72 hr ($SD = 18.76$) per week providing care. The majority of participants worked part time outside the home ($n = 28$), with 10 working full time outside the home, 30 were homemakers, 14 were retired, three were retired and receiving pension, two were unemployed, and three were

students at the time of participation. Regarding highest level of education completed, two completed some elementary school, 18 completed elementary school, three completed some high school, 48 completed high school, two attended or completed technical school, two completed some college, and 35 completed college. With regard to household income, 63 participants earned one to three times minimum wage, 31 earned four to five times, and 16 earned over five times minimum wage.

Measures

A researcher-created questionnaire was used to collect demographic information from caregivers. Caregivers then completed a series of questionnaires assessing personal strengths, family dynamics, and their own mental health. Spanish versions of Family Adaptability and Cohesion Evaluation Scale–Fourth Edition (FACES-IV; Olson, 2010), the Family Communication Scale (FCS; Olson, 2010), the Family Satisfaction Scale (FSS; Olson, 2010), Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001), Generalized Anxiety Disorder-7 scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006), Satisfaction with Life Scale (SWLS; Pavot & Diener, 1993), and Sense of Coherence Scale (SOC-13; Antonovsky, 1993) were readily available. The Resilience Scale for Adults (RSA; Friborg, Hjermald, Rosenvinge, & Martinussen, 2003), Life Orientation Test–Revised (LOT-R; Scheier, Carver, & Bridges, 1994), Relationship-Focused Coping Scale (RFCS; O'Brien & DeLongis, 1996), and the Family Assessment Device–General Functioning (FAD-GF; Epstein, Baldwin, & Bishop, 1983) did not have Spanish versions available and needed to be translated for use in this study. For these measures, methodology outlined by Chapman and Carter (1979) was utilized to translate into Spanish. Measures were translated by a bicultural and bilingual researcher, then back-translated into English by another bicultural and bilingual researcher. If inconsistencies were found between the back-translated version and original English version, they were mutually addressed. Once translated, the measures were submitted for feedback and any additional modification by researchers in Argentina familiar with the regional language and culture. The measures utilized to assess

family dynamics, personal strengths, and mental health in this study have been used extensively in the caregiving literature (Andrén & Elmstahl, 2008; Lin, Rong, & Lee, 2013; Perrin et al., 2013; Sutter et al., 2014; Tomarken et al., 2008).

Family Adaptability and Cohesion Evaluation Scale–Fourth Edition (FACES-IV). The Spanish version of the FACES-IV (Rivero, Martínez-Pampliega, & Olson, 2010) was used to assess family cohesion and flexibility. Two ratio subscale are created that measure balanced and unbalanced domains of flexibility (e.g., “It is important to follow the rules in our family”) and cohesion (e.g., “Family members seem to avoid contact with each other when at home”) with higher ratio scores indicate healthier or more balanced systems (Olson, 2010). The Spanish version of the FACES IV has been shown to have adequate convergent, concurrent, and content validity, as well as good internal consistency ($\alpha = .87$; Rivero, Martínez-Pampliega, & Olson, 2010). In the current sample, internal consistency of the FACES measure—which also includes the Family Communication Scale and the Family Satisfaction Scales—was also high ($\alpha = .89$).

The Family Communication Scale (FCS). A Spanish version of the FCS was utilized to identify the quality of each family’s communication patterns. This 10-item measure assesses family communication (e.g., “Family members are very good listeners”) on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Total scores range from 10 to 50, with higher scores indicating better communication (Olson, 2010). Despite no psychometric data being available for the Spanish version of the FCS, the English version has good internal consistency ($\alpha = .97$), construct validity (Thomas & Lewis, 1999), and test–retest reliability (Olson, 2010).

The Family Satisfaction Scale (FSS). A Spanish version of the FSS was used to determine the extent to which family members are happy, content with each other, and satisfied with their overall family functioning (Olson, 2010). This 10-item scale assesses participants’ level of family satisfaction (e.g., “Your family’s ability to cope with stress”) on a scale of 1 (*very dissatisfied*) to 5 (*extremely satisfied*). Scores range from 10 to 50, with higher scores indicating more satisfaction. This scale has shown excellent internal

consistency ($\alpha = .93$) and good discriminant validity (Olson, 2010).

Family Assessment Device–General Functioning (FAD-GF). This 12-item scale assesses pathology and overall health in the family structure (Epstein, Baldwin, & Bishop, 1983). Items (e.g., “Planning family activities is difficult because we misunderstand each other”) are rated on a 4-point scale from 1 (*strongly agree*) to 4 (*strongly disagree*) such that higher scores indicate greater pathology within the family system. The FAD-GF was translated for the purposes of this study as a Spanish version did not exist prior to this project. The English version of the FAD-GF has demonstrated good discriminant validity (Olson, 2010) and good internal consistency ($\alpha = .83$; Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990). The FAD-GF in the current sample exhibited good internal consistency ($\alpha = .91$).

Relationship-Focused Coping Scale (RFCS). This 10-item scale assesses empathic responses aimed at protecting and maintaining relationships during stressful periods (O’Brien & DeLongis, 1996). Two facets of empathic responding are assessed: cognitive/affective (e.g., “Tried to experience what the other person was feeling”) and behavioral (e.g., “Tried to help the other person(s) involved by listening to them”). Items are rated on a 4-point scale from 0 (*not at all*) to 3 (*a lot*) with higher total scores representative of higher levels of empathic responding. The scale has demonstrated high internal consistency ($\alpha = .93$; O’Brien & DeLongis, 1996) as well as for the current sample ($\alpha = .92$).

Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a nine-item self-report scale that measures depressive symptoms (Kroenke, Spitzer, & Williams, 2001). Respondents indicate the frequency with which each item has bothered them over the prior 2 weeks (e.g., “Little interest or pleasure in doing things”) using a scale from 0 (*not at all*) to 3 (*nearly every day*). Total scores range from 0–27, with higher scores indicating greater depressive symptomatology. The Spanish version of this scale (Wulsin, Somoza, & Heck, 2002) has demonstrated adequate reliability ($\alpha = .92$; Donlan & Lee, 2010), and good convergent and construct validity in Spanish speakers (Diez-Quevedo, Rangil, Sanchez-Planell, Kroenke, &

Spitzer, 2001). The scale exhibited adequate internal consistency for this sample ($\alpha = .81$).

Satisfaction with Life Scale (SWLS). A Spanish version of the five-item, self-report SWLS was used to assess global satisfaction with life (Pavot & Diener, 1993). Respondents rate items (e.g., “I am satisfied with life”) from 1 (*strongly disagree*) to 7 (*strongly agree*), with total scores ranging from 5 to 35, and higher scores indicate greater satisfaction with life. The Spanish version has demonstrated good internal consistency ($\alpha = .82$; Arango-Lasprilla et al., 2009), with the English version demonstrating good construct validity (Pavot & Diener, 1993). The internal consistency for the current sample was good ($\alpha = .92$).

Resilience Scale for Adults (RSA). The RSA (Hjemdal, Friborg, Martinussen, & Rosenvinge, 2001) assesses the extent to which protective resources promote resilience. In its original form, the scale is composed of 45 items utilizing a 7-point Likert structure with five dimensions: social support, personal structure, family coherence, personal competence, and social competence. Each subscale has demonstrated adequate reliability, with α s ranging from .67 to .90. Per the recommendation of the scale authors (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003), a 36-item version was used for the current study with example items including, “Believing in myself helps me to overcome difficult times,” and “I believe in my own abilities.” The internal consistency for the overall scale for this sample was excellent ($\alpha = .97$).

Sense of Coherence Scale (SOC-13). The SOC (Antonovsky, 1993) is used to assess coping ability in the context of life stressors. The scale comprises 13 items addressing three dimensions: comprehensibility, manageability, and meaningfulness. Responses are anchored on two opposing phrases, depending on the item, and are answered using a 7-point scale. Example items include, “Do you have the feeling that you really don’t care about what is going on around you” and “How often do you have the feeling that there’s little meaning in the things you do in your daily life.” The scale has been previously validated on eight Spanish samples with adequate psychometric properties for Spanish speakers varied in age, gender, level of functioning, and disability (Virués-Ortega et al., 2007). The internal consistency for the current sample was adequate ($\alpha = .77$).

Life Orientation Test—Revised (LOT-R).

To assess level of dispositional optimism, participants were administered the 10-item LOT-R (Scheier et al., 1994). Participants respond to each item (e.g., “In uncertain times, I usually expect the best”) with a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Total scores range from 0 to 40, with higher scores indicating greater optimism and a more positive outlook on life. This scale has shown adequate internal consistency ($\alpha = .78$) with further evidence indicating appropriate convergent and divergent validity (Scheier et al., 1994). The scale exhibited adequate internal consistency for the current sample ($\alpha = .81$).

Generalized Anxiety Disorder-7 (GAD-7).

The GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006) is a seven-item scale assessing anxiety symptomology. Respondents are asked to rate how much items (e.g., “Not being able to stop or control worrying”) have bothered them over the past two weeks from 0 (*not at all*) to 3 (*nearly every day*). Total scores range from 0 to 27, and higher scores indicate more severe anxiety symptoms. The Spanish version of this scale has shown adequate internal consistency ($\alpha = .94$; García-Campayo, Zamorano, Ruiz, et al., 2010) with the English version exhibiting good internal consistency ($\alpha = .92$), test-retest reliability, and convergent validity (Spitzer, Kroenke, Williams, & Löwe, 2006). The internal consistency for this sample was good ($\alpha = .84$).

Procedure

Participants were recruited during routine neurologist appointments for the family member with dementia at the Instituto de Neurociencias de San Lucas in Rosario, Argentina. Participants were explained the purpose of the study before enrollment. A psychologist from the region interviewed the caregivers for approximately 1 hr to administer study measures orally in order to overcome possible reading difficulties. As part of the interview, participants provided sociodemographic information and responded to measures of family functioning, personal strengths, and mental health while the patient was seeing their physician. The psychologist conducting the interviews was Argentinian and therefore fluent in the Spanish of that region. The participants did not receive com-

compensation for their participation and fully consented before participation in the IRB-approved study.

Results

A structural equation model (SEM) was constructed to examine whether the potential association between family dynamics and dementia caregiver mental health was mediated by caregiver personal strengths. This SEM was computed using AMOS 16.0 (Arbuckle, 2007). The sample size in this study was smaller than the sample size of 200 that Weston, Gore, Chan, and Catalano (2008) recommend for using SEM in rehabilitation research, and as a result, estimates of fit were omitted because they would likely be inaccurate. However, standardized beta weights among the variables in the model, as well as the standardized indirect effect of family dynamics on caregiver mental health through caregiver personal strengths, were provided and focused on for interpretation.

Checks for normality were run on all manifest variables used in the SEM with a skewness and kurtosis coefficient of 2.0 as a cutoff. The vast majority of variables had values below this cutoff except for depression (skewness coefficient = 2.40; kurtosis coefficient = 10.71) and anxiety (skewness = 2.29; kurtosis = 8.32). As a result, both variables were transformed using a square-root transformation, resulting in a more normal distribution for both depression (skewness = $-.08$; kurtosis = $-.02$) and anxiety (skewness = $-.07$; kurtosis = $.68$).

In the first model, the latent variable of family dynamics was created using the six manifest variables of cohesion, flexibility, communication, family satisfaction, pathology, and empathy. The latent variable of personal strengths was created with the three manifest variables of resilience, optimism, and sense of coherence. And the latent variable of mental health comprised the manifest variables of depression, anxiety, and satisfaction with life. To determine whether the latent variables were all correlated with each other without controlling for other variables, an exploratory SEM was run in which bidirectional (correlational) paths were specified among the three latent variables. In this model, family dynamics was correlated with personal strengths at $r = .66$ ($p < .001$), family dynamics with mental health at $r = .49$ ($p = .001$), and personal strengths with mental health at $r = 1.15$ ($p < .001$).

In the second SEM (see Figure 1), family dynamics was specified to lead directly to caregiver mental health, as well as to yield an indirect effect on mental health through caregiver personal strengths. In this model, family dynamics was significantly associated with caregiver personal strengths ($\beta = .66$, $p < .001$). Caregiver personal strengths was significantly associated with mental health ($\beta = 1.48$, $p < .001$). And the direct effect of family dynamics on caregiver mental health was slightly statistically significant, but in the opposite direction as what was found in the first SEM ($\beta = -.50$, $p = .027$). Bootstrapping analyses with 2,000 calculated samples found that the indirect effect

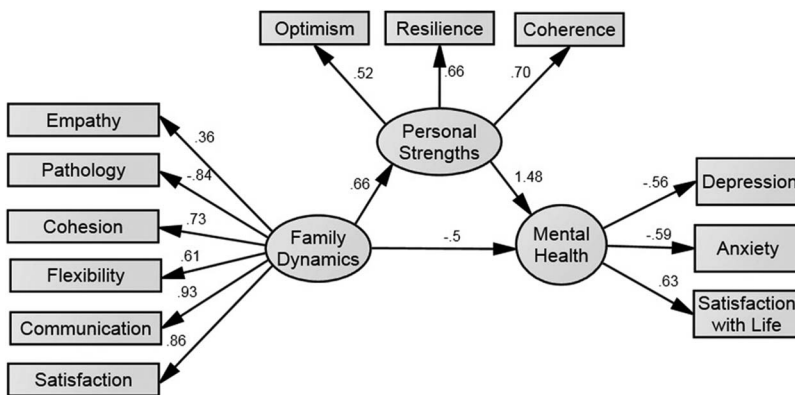


Figure 1. Structural equation model.

of family dynamics on caregiver mental health through personal strengths was also statistically significant ($\beta = .99, p = .001$).

The reversal of direction for the path between family dynamics and caregiver mental health between the first and second SEMs is likely a suppressor effect attributable to a Heywood case. The standardized loading between caregiver personal strengths and mental health above one indicates the Heywood case, a fairly common issue in SEM (Kolenikov & Bollen, 2012). Although model misspecification is sometimes used as an explanation for a Heywood case, a more likely explanation in the current SEM is the strong association between caregiver personal strengths and mental health. Because this effect was so strong in the second SEM, as well as the meditational indirect effect, the reversal in direction is likely attributable to error left over after controlling for personal strengths and should be interpreted as nonsignificant. This would indicate a full mediation of personal strengths on the relationship between family dynamics and caregiver mental health.

A correlation matrix (see Table 1) of all manifest indices of the primary constructs in the current study was then computed using SPSS 21.0. In this matrix, all family dynamics variables were associated with all other family dynamics variables, all personal strengths variables were associated with all other personal strengths variables, and all mental health variables were associated with all other mental health variables. All personal strengths variables were also associated with all mental health variables in the direction that would be expected. Sense of coherence and resilience were associated with all family dynamics variables except for the relationship between flexibility and resilience, which was not significant. Also, optimism was only significantly associated with pathology and family satisfaction with all other associations with family dynamics variables as not significant. Family dynamics were also generally associated with anxiety and satisfaction with life, but not with depression.

Discussion

The purpose of this study was to create an SEM examining the role of family dynamics and personal strengths in caregiver mental

Table 1
Correlation Matrix

Variable	Empathy	Pathology	Cohesion	Flexibility	Comm.	Fam. sat.	Resilience	Sense of coh.	Optimism	Depression	Anxiety
Empathy	-.281**										
Pathology	.327**	-.658**									
Cohesion	.306**	-.649**	.789**								
Flexibility	.332**	-.756**	.652**	.544**							
Communication	.247**	-.735**	.551**	.387**	.840**						
Fam. sat.	.317**	-.415**	.311**	.182	.350**	.358**					
Resilience	.349**	-.507**	.385**	.293**	.554**	.434**	.448**				
Sense of coh.	.068	-.203*	.130	.026	.159	.189*	.499**	.264**			
Optimism	-.076	.122	.090	.061	-.125	-.088	-.420**	-.378**	-.419**		
Depression	-.228*	.257**	-.188*	-.171	-.312**	-.264**	-.409**	-.584**	-.230*	.422**	
Anxiety	.262**	-.368**	.354**	.218*	.381**	.330**	.524**	.400**	.552**	-.411**	-.246**

Note. sat. = satisfaction; fam. = family; coh. = coherence.

* $p < .05$. ** $p < .01$.

health. It was hypothesized that personal strengths would mediate the relationship between family dynamics and caregiver mental health in a sample of dementia caregivers from Argentina. An SEM uncovered that family dynamics, personal strengths, and mental health were all positively related, and a second SEM found extremely strong support for the study's hypothesis, as personal strengths fully mediated the relationship between family dynamics and caregiver mental health. A bivariate correlation matrix then notably found that the family dynamics variables were most associated with caregiver sense of coherence, resilience, anxiety, and satisfaction with life.

Correlational Model

In the first SEM, family dynamics was correlated with personal strengths, family dynamics with mental health, and personal strengths with mental health. This same overarching pattern of relationships emerged in the bivariate correlation matrix. In this SEM, the relationship between family dynamics and personal strengths yielded a large correlation coefficient of $r = .66$ ($p < .001$), suggesting a very high degree of overlap between the two constructs. Previous research has similarly found this general relationship. For example, Wilks and Croom (2008) found that dementia caregivers with high family support tended to have high levels of resilience, which is in line with Argentinian culture emphasizing strong family ties. Previous research has also suggested that healthy family dynamics, such as an appropriate level of flexibility in family roles, cohesiveness, low pathology, and healthy communication, may protect caregivers by providing a sense of belonging and lead to the appraisal of stressors as more manageable and less threatening (Cheng et al., 2013).

In this same SEM, family dynamics and mental health were correlated at $r = .49$ ($p = .001$). Indeed, previous research has shown family dynamics to be associated with dementia caregiver mental health in Latin America (Sutter et al., 2014), and Cheng and colleagues (2013) found that positive exchanges between dementia caregivers and family members were associated with lower burden and overload. Argentina has seen a rise in nuclear homes with many children choosing to remain with the immediate family

(Herscovici, 2004), suggesting that they may be receiving continued family support, which may aid in reducing caregiver burden. Similarly, greater family conflict was predictive of increased depression and overload (Zarit, Femia, Kim, & Whitlatch, 2010). These reports buttress prior work in this area noting the importance of the family's effect on dementia caregivers, especially within a culture that emphasizes the nuclear family, and highlight the need to examine the family context when addressing caregiver mental health needs.

Finally, in the first SEM, personal strengths and mental health were correlated at $r = 1.15$ ($p < .001$), and although this correlation was above 1.0 and also a reflection of the Heywood case, it suggests an extremely high degree of overlap between the two sets of variables. Previous research too has revealed a relationship between personal strengths and mental health. Sutter and colleagues' (2014) identified that dementia caregivers from Mexico and Argentina with greater levels of personal strengths (i.e., resilience, optimism, and sense of coherence) tended to have better mental health (e.g., burden, depression, and satisfaction with life). Additionally, sense of coherence has been shown to be inversely associated with burden, anxiety, and depression in dementia caregivers (Andr n & Elmstahl, 2008; Ekwall, Sivberg, & Hallberg, 2007; Orgeta & Sterzo, 2013). Sense of coherence is a central component of personal strengths in the current study's SEMs and often involves effective stress appraisal and the use of positive coping strategies (Orgeta & Sterzo, 2013; Carver, Spencer, & Scheier, 1998; Garity, 1997). The value of *familismo* in Latino cultures influences the perception that caregiving is a way of showing loyalty toward older family members. This in combination with the reliance on faith among Argentinians may buffer against feeling burdened by caregiving duties and subsequently create greater meaning from the caregiving experience. In Latino dementia caregivers specifically, it had been suggested that burden, depression, and psychological distress may result from distinct appraisals of the nature and scope of their caregiving duties (Aranda & Knight, 1997), which indeed appears to have found support in the current findings.

Mediational Model and Clinical Implications

This study's central finding was that the indirect effect of family dynamics on caregiver mental health through personal strengths was statistically significant and a full mediation. A plausible interpretation of this finding is that family dynamics exert their effects on dementia caregiver mental health through a bolstering of caregiver personal strengths. Previous research has identified familial support networks as primary coping resources and enhancers of personal strengths, such as resilience (Greeff & Holtkamp, 2007; Rutter & Rutter, 1993). These adaptive ways of dealing with stressors in the caregiving experience, maintained and supported by healthy family dynamics, may in turn yield better reported mental health functioning and satisfaction with life in caregivers.

A number of studies have highlighted the importance of good mental health influencing physical health, quality of life, and social productivity (Huppert, 2005; Linley & Joseph, 2004), especially in informal caregivers for individuals with dementia. The results of these studies suggest that interventions may be efficacious in improving the mental health of family dementia caregivers in Latin America via increased focus on improving healthy family dynamics, especially in the domains of family cohesion and communication, both of which were significantly associated with personal sense of coherence and resilience. This may have an indirect result of mitigating the effects of caregiving stress, lowering depression and anxiety by improving caregivers' personal strengths, especially resilience and sense of coherence.

Studies focusing on family systems interventions have shown some promise in improving dementia caregiver mental health. Given the importance of family in Argentinian culture as well as Latino populations more broadly, it would be appropriate to infer that interventions aimed at family systems could affect caregiver mental health. These interventions may specifically include strategies to improve the ways in which family members communicate with each other and organize and adapt during times of acute caregiving stress. In one such study, Silvestri et al. (2004) directed an intervention that provided dementia caregivers in Italy with com-

munication training that prepared them to interact with the person with dementia through verbal and nonverbal language across all phases of the disease. Results yielded improvements in functioning and behavioral disturbances in the person with dementia. The skills acquired from this type of training could be readily adapted for caregivers and family members caring for a person with dementia in Latin America (for adaptation tools see Bernal, Jiménez-Chafey, & Domenech Rodríguez, 2009) and suggest that improvements in family communication may lead to better caregiver mental health, as evidenced by the family dynamics to mental health pathway.

Results from the meditational effect in the current study also suggest that interventions aimed at improving personal strengths may subsequently improve dementia caregiver mental health. In one of the first studies utilizing a cognitive-behavioral intervention in family dementia caregivers in Latin America, Arango-Lasprilla et al. (2014) provided dementia caregivers with coping strategies aimed at managing negative feelings, which arise in the context of caregiving. Caregivers in the intervention group showed higher satisfaction with life and lower depression and burden than the control group, after accounting for baseline differences. It is possible that through cognitive reframing, caregivers may be able to perceive their experiences associating with providing care as meaningful, an aspect of sense of coherence within the personal strengths framework in the current study. When coupled with the strong family support exhibited in Latino families, an important influence on personal strength, altered caregiver perceptions and greater appraisal of stressors seems likely.

Research on interventions in related fields has found that targeting personal strengths can improve mental health. In a study of at-risk schoolchildren, enhanced optimism was shown to prevent depression (Jaycox, Reivich, Gillham, & Seligman, 1994). And stroke caregivers who utilized a telephone-based skill-building intervention reported enhanced dispositional optimism and other improvements (e.g., reduced threat appraisal and task difficulty; Bakas et al., 2009). Though the precise mechanisms by which change occurred was not identified, the authors suggest that teaching caregivers stress management strategies may have improved op-

timism with the added benefit of caregiver depression and threat appraisal. Certainly, further studies are needed to inform mental health interventions by targeting dementia caregiver family dynamics and personal strengths, including the tailoring of such interventions to cultural backgrounds.

Limitations and Future Directions

Even though the current mediational model was strongly supported by the data, reported results need to be considered in light of certain limitations. First, the data were gathered from one city in Argentina, and as such may not be generalizable to dementia caregivers in other parts of Latin America. The study participants were recruited from a clinic which provides rehabilitation and support services for individuals with neurological conditions and their caregivers, and it is possible that the results would not have the same effect in dementia caregivers from more remote or rural areas of Latin America, where even fewer services and resources are available. Second, because of the cross-sectional nature of this mediational model, causation cannot be inferred. Additional variables may be influencing the relationship between family dynamics and caregiver mental health, but are not measured in the present study. For example, in addition to more positive stress appraisal, past research has identified positive emotions as a crucial component of personal strengths (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barnett, 2004). Positive emotions have the effect of facilitating adaptive coping (Folkman & Moskowitz, 2000), promoting flexibility in problem solving and thinking (Fredrickson & Branigan, 2005), counteracting the physiological effects of negative emotions (Fredrickson & Levenson, 1998), and fostering recovery from stressful life events (Zautra, Johnson, & Davis, 2005). Therefore future research should include these additional possible influences. Third, the obtained sample size did not lend itself to a comparison of models that would identify unique associations between constructs and provide a more nuanced explanation of the relationships within the models. Subsequently, examination of fit statistics was omitted, as those indices would likely be inaccurate on a limited sample, so similar models should be run with larger samples in order to

compare the fit indices of the current model to those of alternative models and retain the model with the best fit.

Conclusion

This study adds to the growing body of knowledge on family dynamics and mental health among dementia caregivers in Latin America, and extends it by providing a possible path between family functioning and caregiver mental health. It underscores the importance of family in Latin America and the necessity for culturally informed interventions to improve mental health and quality of life of dementia caregivers. These interventions may benefit from including family centered and cognitive-behavioral approaches as a means of boosting existing personal strengths, which in turn may have a positive effect on caregiver mental health and quality of life in both caregivers and individuals with dementia.

Abstracto

El propósito de esta investigación fue usar modelos de ecuaciones estructurales (MES) para investigar el papel de la dinámica familiar y fortalezas personales en la salud mental de los cuidadores de pacientes con demencia en Latinoamérica. La muestra estaba compuesta por 110 cuidadores de Argentina que completaron medidas de estos conceptos. Se planteó la hipótesis que las fortalezas personales mediarían la reacción entre la dinámica familiar y la salud mental del cuidador. Un MES identificó que estos conceptos fueron relacionados positivamente y un segundo MES encontró un fuerte apoyo para la hipótesis de la investigación, donde las fortalezas personales mediaron totalmente la relación entre las variables de dinámica familiar y la salud mental de los cuidadores. Una correlación encontró en particular que la variable de dinámica familiar fue asociada con el sentido de coherencia del cuidador, resiliencia, ansiedad, y satisfacción con la vida. Los resultados de esta investigación sugiere que las intervenciones para cuidadores en Latinoamérica puede ser beneficiosas si se incluyen métodos cognitivos-conductuales y se centra en la familia como un método para aumentar las fortalezas personales, que por su parte puede tener un efecto positivo sobre la salud mental de los cuidadores.

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Received May 22, 2014

Revision received May 26, 2015

Accepted May 29, 2015 ■