



Quality of Relationship Between Adult Children Caregivers and Parents With Dementia

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Abstract

The main effects for associations between psychosocial stressors and caregiver outcomes are well established, but little is known about the mechanisms of these relationships. Aims of this study were to examine the hypotheses that satisfaction with family relationships (SF) is a mechanism by which quality of relationship (QR) between adult children caregiver and parents with Alzheimer's disease (AD) influences depression, life satisfaction (LF), and self-rated health (SRH) among these caregivers. The participants were 716 Brazilian adult children who cared for their parents with AD and related disorders. Regression-based path analysis was performed; a PROCESS, bias-corrected and accelerated bootstrapping method was used to test confidence intervals. The relationships between QR and both depression ($B = .3263$, $p < .001$) and SRH ($B = .3263$, $p < .001$), were fully mediated by SF. The relationship between QR and LF was partially mediated by SF. The primary finding is that SF is one mechanism by which QR relates to depressive symptomatology, self-rated health, and life satisfaction.

Keywords

quality of relationship, relationship parent-child adult, satisfaction with family relationship, family, dementia, Alzheimer disease

Alzheimer's disease and associated disorders (ADRD) are a group of chronic, degenerative brain diseases that cause deterioration in the mind, memory, and behavior of patients. Among these disorders, Alzheimer's disease (AD) is the most common specific diagnosis (Alzheimer's Association, 2017). Informal caregivers, most commonly the daughter, wife or daughter-in-law, play an important role in caring for AD patients who live at home (Amspoker et al., 2021; Falcão & Bucher-Maluschke, 2009). Caregiving for



an older parent differs significantly from caring for a dependent spouse. This is partly due to the nature of the parent-child bond across the lifespan. Also, they face various challenges, live experience of “role reversal,” and often experience significant life events have to deal with competing demands in the domains of family, marriage, work, friends and caregiving (Li et al., 2021; Luichies et al., 2021). In Latin America societies there is a greater expectation that adult children take care of their parents in old age. In Brazil, most adult children caring for older parents also express the desire to be cared for by their adult children when they get older (Aires et al., 2019).

Past work (Ayalon & Roziner, 2016; Enright et al., 2020; Iecovich, 2011; Rippon et al., 2020) has found that relationship quality between caregiver and care recipient and satisfaction with family relationships impact the caregivers’ subjective experience. Perceptions of relationship quality may be influenced by many variables, such as the kin-relationship and characteristics of the person with dementia or the caregiver (Quinn et al., 2009). Previous studies found that the better relationship quality and caregiver well-being was reported by non-spousal dyads (e.g., adult children / adult children-in-law) in comparison with spousal/partner caregivers (Clare et al., 2012; Rippon et al., 2020). Adult children caring for their ageing parents face various challenges. They often experience significant life events have to deal with competing demands in the domains of work, marriage, family and caregiving. Brazilian dementia caregivers are more likely than their non-caregiving peers to experience anxiety (31% vs 18%), depression (23% vs 11%), and insomnia (27% vs 15%; Laks et al., 2016).

The Stress Process Model (Pearlin et al., 1990) may be one is a frame for understanding how subjective relationship quality and satisfaction interrelate. Family factors are often complex within the context of dementia caregiving, and there is little work in the literature addressing perceptions of caregiving among Brazilian caregivers. In this context, past research (Falcão, 2006; Falcão et al., 2016) has examined the general aspects of family relationships between adult children caregiver and parents (care recipients) with AD, but has not investigated specifically the satisfaction with family relationship (SF) and how the quality of relationships (QR) between them contributes to caregiver well-being. It is unclear whether adult child caregiver-rated QR is associated with overall satisfaction with family relationships.

An integrative review (Dullius & Migott, 2016) detected that most of the studies focus on the quality of life of the person with dementia and not the quality of the dyad. It is well documented that psychosocial and interpersonal variables broadly relate to subjective well-being. Dementia caregiving presents a challenge both to one’s interpersonal relationships and one’s sense of well-being. A systematic review (Quinn et al., 2009) concluded that poor QR adversely impacts caregivers’ wellbeing and that more research is needed to understand these effects. The present study examined the associations between QR and SF with three indicators of subjective well-being (depressive symptoms,

life satisfaction, and self-rated health) among adult child caregivers of parents with ADRD in Brazil.

It is important to highlight that the relationship quality and relationship satisfaction are related constructs. According to the semantic definition, the concept of relationship quality parent-child adult caregiver can be conceptualized as “different interactional patterns that can be observed by others”, while satisfaction with family relationships “is a subjective evaluation of those interactional patterns that reflect the degree of contentment” (Cepukiene, 2019, p. 2) or the degree to which family members feel happy and fulfilled with each other (Olson, 2004). In the present study, satisfaction with family relationships was assessed based on what the adult child caregivers understood by family and which members were part of it, reflecting a cognitive process of subjective assessment of general family life (Zabriskie & Ward, 2013). Previous research suggested that the understanding of the phrase “family” varies among Brazilians, and typically spans from including only one’s nuclear family to including the extended family of first, second, and third degree relatives (Falcão, 2006).

Theoretical Framework

The theoretical model most commonly used to study consequences of the caregiving process is the Stress and Coping model (Lazarus & Folkman, 1984), which has been adapted for this purpose (Haley et al., 1987; Pearlin et al., 1990). The Stress Process Model (Pearlin et al., 1990) posits that caregivers go through a developmental process in adapting to events and identifies four domains in this process: the background and context of stress, caregiving stressors, resources/mediators, and caregiving outcomes. This model has been used to examine the impact of family dynamics on caregivers and proposes that family dynamics influence caregiver stress within the context of interpersonal relationships. This framework assumes that various intervening factors influence how individuals respond to stress and suggests that caregiving can be disruptive to dyadic parent-child or marital relationships. When one member of a dyad develops dementia, the relationship typically shifts from being reciprocal to a caregiving relationship in which the care recipient’s functional dependence creates increased demands for the caregiver (Fauth et al., 2012).

One limitation of the Stress Process Model is that it does not explicitly state that quality of the relationship might act as a predictor and/or mediator, buffering the impact of the stressors (Quinn et al., 2009). In this direction, Lawrence, Tennstedt, and Assmann (1998) suggested adding QR to the caregiver stress and appraisal models, noting that relationship quality “can be viewed not only as a product of the stressors, but also as providing a particular lens through which stressors are interpreted or appraised” (p. 150). Furthermore, Campbell et al. (2008) reviewed the stress process model and concluded that the strongest predictors of caregiver burden were their previous relationship with the patient, their own confidence and efficacy in the role, the caregiver’s experience

of adverse life events outside of the caregiver role, the time they have to develop and sustain their sense of self, and the caregiver current QR with the patient. In this context, low levels of closeness and poor overall quality in the current relationship, as well as the modification in relationship closeness in the dyad since dementia beginning (e.g. feelings of loss), may contribute to caregiving stress and adverse caregiver effects.

Quality Relationship Parent-Child Adult Caregiver and Well-Being

The parent-child relationship is one of the most long-lasting and emotionally intense social ties. Attachment theory suggests that individuals develop internalized working models of their relationships as they move from childhood to adulthood (Bowby, 1982). Relationships between adults and their aging parents differ from other types of social bonds due to their long-shared history and the evolving nature of the relationship from infancy through adulthood (Fingerman & Birditt, 2011). An important but frequently overlooked factor in the motivation to continue providing care is the QR between caregiver and care recipient (Winter et al., 2011). The quality of one's relationships is an important dimension of intergenerational relations (Bengtson & Roberts, 1991; Birditt et al., 2012) and is one of the most potent psychosocial predictors of health outcomes (Uchino, 2013).

The quality of the caregiver-care recipient relationship includes positive aspects such as positive sentiment to the person, feelings of emotional closeness to the person, similarity in values and beliefs (Lawrence et al., 1998), and emotional support provided by significant others. However, strained aspects of relationships include conflict and stress (Umberson & Montez, 2010). Nonetheless, positivity and negativity are distinguishable aspects, and many individuals interpret their relationships as having a mix of positive and negative feelings (Holt-Lunstad et al., 2007). Researchers have proposed that positive, negative, and a mixture of both positive and negative aspects of parent-child relationships carry significant and distinct consequences for well-being across the lifespan (Birditt et al., 2009; Chen & Jordan, 2019; Polenick et al., 2018).

Several studies found that higher levels of QR between family caregiver and care recipient is positively associated with self-esteem, quality of life, self-rated health, life satisfaction (Li & Seltzer, 2003; Nunley et al., 2000), and caregiver life satisfaction (Fingerman et al., 2008; Polenick et al., 2018). Poor QR increased the current guilt (Feast et al., 2017), distress, strain, depression of caregivers (Quinn et al., 2009). Spruytte, Audenhove, Lammertyn, and Storms (2002) studied reasons for poorer QR between caregivers and care recipients and discovered that problematic behaviors and the caregiver's evaluation of these behaviors were the primary explanatory variables. Furthermore, the QR between adults and their parents characterized by ambivalent interactions are associated with more depressive symptoms (Fingerman et al., 2008) and loneliness (Hua et al., 2021).

Past work suggests that QR varies over the duration of the dementia caregiving, and that QR prior to emergence of dementia symptoms serves as a starting point from which QR will subsequently vary. *Betts Adams, McClendon, and Smyth (2008)* found that among dementia caregiving families, decline in QR and sense of personal identity relate to escalation of depressive symptoms. Caregiver depressive symptoms are related to both QR before caregiving and throughout the caregiving relationship. QR is also related to subjective experience of role captivity and intergenerational conflict (*Samuelsson et al., 2001*).

Satisfaction With Family Relationships in Context of Caregiving

The conception of the family is heterogenous. More broadly construed, the term ‘family’ refers to the group of individuals bound together by consanguineous, consensual, juridical or affective ties, and support through exchanges influenced by biopsychosocial, historical, cultural, and economic factors (*Falcão, 2006*). Thus, the feeling of belonging to a family involves affection, freedom, reciprocity, care, intergenerational solidarity, shared stories, and factors that cover conscious and unconscious issues (*Falcão & Bucher-Maluschke, 2009*).

Life satisfaction is positively associated with family cohesion, communication, adaptability, and overall family functioning (*Poff et al., 2010*). Satisfaction with family relationships relates to subjective quality of intergenerational relationships (*Wu et al., 2016*). Primary caregivers of relatives with dementia, who also experience family disconnection, expressed dissatisfaction with family relationships, describing feelings of isolation and loneliness (*Guerra et al., 2016*).

As experienced by adult child caregivers, SF is influenced by positive and negative exchanges received by the parent (*Carruth et al., 1997*), which underscores how the changing relationship with a loved one throughout the caregiver trajectory may be vulnerable to shifting social dynamics. In application to this synthesis, the QR between a caregiver and a care recipient impacts satisfaction with family relationships (*Savage & Bailey, 2004*).

SF between the caregiver and care-recipient influences self-rated health of both parties (*Zehner Ourada & Walker, 2014*). Poor self-rated health is associated with more depressive symptoms and lower family relationship satisfaction (*Monin et al., 2019*). Past work has not considered the interrelationships between quality of relationships, relationship satisfaction, and caregiver outcomes. In combination, these past findings suggest a mechanistic relationship between relationship quality, relationship satisfaction, and subjective caregiver outcomes. The goal of this study is to explore this theoretical framework.

The Current Study

First, we aimed to investigate the current adult children caregivers' perceptions of relationship quality with their parents (care recipients) with Alzheimer's disease and related disorders as predictors of depressive symptoms, self-rated health, and life satisfaction. Second, we aimed to evaluate the satisfaction with family relationship as a predictor of depressive symptoms, self-rated health, and life satisfaction. Third, we hypothesized that satisfaction with family relationship would mediate the relationship between the current adult children caregiver's perceptions of relationship quality with their parents with Alzheimer's disease and related disorders and depression, satisfaction with life, and self-reported health. The higher current QR between adult children caregiver-parents with Alzheimer's disease and related disorders would then lead to higher satisfaction with family relationship, which in turn would lead to (Hypothesis 1) lower depression, (Hypothesis 2) higher life satisfaction, and (Hypothesis 3) good self-rated health. Given that life satisfaction is a multifactorial variable, and the mediation effect is assumed as being partial.

Method

Participants

A total of 1,176 caregivers were contacted for the study, and they received no payment or reward for their participation. After applying criteria, the final sample included 716 individuals. Inclusion criteria were checked: must be a Brazilian citizen; being a adult children who cared for their parents (father or mother) with AD and related disorders in the home; identifying himself/herself as the primary caregivers, and having provided care for a longer period than 6 months. Inclusion criteria for the mother or father: a) must be 60 or older; b) community-dwelling older people; c) must have diagnosis of AD or related disorder.

Instruments

Demographic and Socioeconomic Information of Caregivers and the Elderly

Assessed demographic variables included gender, civil status, age, level of education, maternal or paternal relationship with care receiver, perception of what stage the disease is at (initial, moderate, advanced; clinical descriptions were provided to characterize each response option), who the primary caregiver of the senior with AD is, approximate length of time the aging person has been cared for, living arrangements, if they have children and siblings, and monthly household income.

Overall Current Quality of Relationship Between Adult Children Caregiver and Parents With AD

Given that relationship quality is subjective, its measurement must be rooted in the perceptions of each respondent (Litwin & Shiovitz-Ezra, 2006; Wu et al., 2016). This was assessed using a five-point Likert-type scale (1 = *very bad at all* to 5 = *very good*) reading “Overall, how do you evaluate your current relationship quality with your father/mother you provide care for?” This measure has been used in research and is associated with indicators of subjective well-being (Merz et al., 2009).

Overall Satisfaction With Family Relationships

Respondents were asked to rate their satisfaction with family relationship on a five-point scale (1 = *highly dissatisfied at all* to 5 = *highly satisfied*) based on the question: “Overall, how satisfied are you with your familiar relationships?” This measure is used in past research and is strongly correlated with indicators of subjective well-being (Ferring et al., 2004). As already highlighted, previous research suggested that the understanding of the phrase “family” varies among Brazilians, and typically spans from including only one’s nuclear family to including the extended family (Falcão, 2006). The deliberately vague wording of the question left the interpretation up to the reader.

Self-Rated Health

One 5-point scale (1 = *very bad at all* to 5 = *very good*) for measuring self-rated health was applied. The participants responded to the question: “How do you evaluate your overall health condition?” This measure is used in past research and is correlated with objective physical health status and subjective well-being (Jylhä, 2009; Polenick et al., 2018).

Life Satisfaction

The Satisfaction with Life Scale (Diener et al., 1985) have been used in international literature to measure the overall level of life satisfaction of respondents. It is one-dimensional and has 5 items using a 7-point Likert scale. This study was reduced to a 5-point scale (ranging from strongly agree to strongly disagree). It was translated, adapted and validated in Brazil by Gouveia, Milfont, Fonseca, and Coelho (2009). Internal consistency in the gathered data was high (Cronbach’s $\alpha = .87$).

Depression

The *Center for Epidemiologic Studies Depression scale* (CES-D; Radloff, 1977) was used to measure the frequency that caregivers experience each one of the 20 indicators of depression. The original study involving this instrument had a structure of four factors: *positive affection, depression, reduced somatic/activity aspects, and interpersonal issues*. The participants are asked to respond “yes” or “no” to each item on the scale based on

their experiences during the previous week. Possible range of scores is 0 to 60, with the higher scores indicating the presence of more symptomatology of depression. Internal consistency in this data was high (Cronbach's $\alpha = .84$).

Procedure

Data Collection

This study used a cross-sectional design. The questionnaire was available online using the Qualtrics survey software tool (Qualtrics, 2013) on an internet site created specifically for the study. The participants received an invitation via email and social networking sites (Instagram, Facebook, WhatsApp) to participate in the study, directing them to a website which contained the online questionnaire. Emails were also sent to some academic researchers and support group coordinators from family caregiving institutions such as ABRAz (Brazilian Alzheimer's Association). The purpose for sending these emails was to distribute the study throughout the groups. If people in these groups were interested in participating in the study, they were asked to provide their emails, so the researchers could contact them and formalize the invitation by email. Those who received it were advised that the questionnaire was exclusively for adult children who are caregivers for parents with Alzheimer's disease and other related disorders. Once having accepted the invitation and accessed the questionnaire in Portuguese, the participants needed to then agree with the Terms of Consent in order to access the questions. To show appreciation for completing the questionnaire, the caregivers were then given access to a video class on Alzheimer's disease and family relationships with those who have the illness. The Institutional Review Board at University of Central Florida (U.S.A.) and Ethics Committee of School of Arts, Science and Humanities at the University of São Paulo (Brazil) granted ethical approval for the study.

Data Analysis

Descriptive analyses were performed for frequency, means, standardized deviations, median, and minimum and maximum values. An a priori calculation using the G*Power (Version 3.1.9.2) calculator developed by Faul, Erdfelder, Lang, and Buchner (2007), for F test, linear multiple regression (fixed model), with a default effect size ($f^2 = .15$) with limited probabilities for Type I or Type II errors ($\alpha = .05$; $1 - \beta$ [power] = .95, respectively), and number of predictors = 2 the calculated sample size was 107. Thus, the power of this study with a current sample size of 716 should be above .95.

Analyses were conducted on baseline data entered *Statistical Package for the Social Sciences* (SPSS) 25.0 version. We used a regression-based path analysis with the aid of Hayes (2017) PROCESS macro approach for estimating interactions and conditional indirect effects in mediation models and for assessing hypothesized relations between variables. The criteria needed to designate a mediation relationship (Baron & Kenny, 1986) are: (1) the predictor variable requests to significantly predict the outcome variable,

(2) the predictor variable must significantly predict the mediator variable(s), and (3) the mediator variable(s) must significantly predict the outcome variable while controlling for the predictor variable. If both direct and indirect effects remain significant, the association is said to be partially mediated (Hayes, 2017).

The relation between the independent variable, dependent variable, and the mediator were addressed with bootstrapping techniques that are good for determining indirect effects (Preacher & Hayes, 2008). Bootstrapping is an extension of the Sobel test (Sobel, 1982) and is a nonparametric approach that resamples the original sample size from the original data set multiple times. In any specific resample, it is expected that some data points in the original data will be present two or more times with others possibly absent (Preacher & Hayes, 2008).

The following adjustment indicators were considered (Hayes, 2017; Tabachnick & Fidell, 2013): chi-square (χ^2 ideal low values); we used bootstrapping (5000 boot resample, OLS estimation) to measure the parameters' product terms (ab), to generate the standard errors (95%) and confidence intervals (CI), and the significance levels of indirect, direct, and total effects. When interpreting the results, it is necessary to observe differences between mediation effects and indirect effects. Indirect effects in which the 95% confidence interval does not include zero reflect a significant mediation effect. For this study, significance level was set at $p < .05$.

Results

Regarding caregiver characteristics, the final sample included 716 adult children caregivers (92.5% were daughters; the mean age was 48.7, $SD = 9.7$) who take care of their aging fathers or mothers living with AD in the home. The most of caregivers were female (92.5%) and primary caregiver (73.7%). The perception about parental dementia stage were initial (15.1%), moderate (51.5%) and advanced (33.4%). Others information are described in Table 1.

Table 1

Descriptive Statistics and Demographic Characteristics of Caregivers

| Variable | <i>M (SD)</i> | Range | % |
|--------------------------------------|---------------|-------|------|
| Age (years) | 48.7 (9.7) | 20–89 | |
| CES-D | 24.3 (11.2) | 0–57 | |
| Life satisfaction | 14.7 (4.5) | 0–20 | |
| Gender (Female) | | | 92.5 |
| Parent with Alzheimer disease | | | |
| Mother | | | 73.6 |
| Father | | | 24.7 |

| Variable | <i>M (SD)</i> | Range | % |
|--------------------------------------|---------------|-------|------|
| Both (mother and father) | | | 1.7 |
| Caregiving time | | | |
| More than 5 years | | | 41.9 |
| 3 to 4 years | | | 16.2 |
| 2 to 3 years | | | 14.9 |
| 1 to 2 years | | | 17.5 |
| Less than 1 year | | | 9.5 |
| Marital status | | | |
| Married | | | 53.9 |
| Single | | | 25.4 |
| Divorced | | | 13.1 |
| Separated | | | 3.5 |
| Widowed | | | 4.1 |
| Level of education | | | |
| Elementary school | | | 0.8 |
| Middle school | | | 7.7 |
| High school | | | 34.1 |
| Bachelor's degree | | | 33.5 |
| Master's degree or higher | | | 23.9 |
| Living arrangement | | | |
| Parent with Alzheimer disease | | | 57.1 |
| Husband/wife or partner | | | 52.1 |
| Son(s) or daughter(s) | | | 46.4 |
| Grandson and/or other(s) relative(s) | | | 15.6 |
| Alone | | | 4.7 |
| Maid or professional caregiver | | | 4.2 |
| Have children | | | 67.9 |
| Have siblings | | | 89.5 |
| Household monthly income | | | |
| < \$856.35 | | | 31.8 |
| \$856.35 to \$2.569 | | | 42.7 |
| \$2.569 to \$4.282 | | | 11.2 |
| More than \$4.282 | | | 6.2 |
| Did not respond | | | 8.1 |

Note. CESD = Center for Epidemiological Studies-Depression measure, Portuguese (Brazilian) language version.

It was verified that the caregivers evaluated their health conditions as very bad (1.7%), bad (7.4%), regular (40.1%), good (39.8%) and very good (11%). They also evaluated the quality of the relationship with their parents with AD as very bad (1.1%), bad (3.9%), regular (17.5%), good (33.5%) and very good (44%). Finally, they rated their satisfaction

with their family relationship as highly dissatisfied (8%), dissatisfied (12.7%), regular (40.1%), satisfied (29.1%), highly satisfied (10.2%). The mean score for the CES-D was 24.3 ($SD = 11.2$) and the mean score for life satisfaction was 14.7 ($SD = 4.5$).

The direct effect of QR adult children caregiver-parents with AD and the satisfaction with family relationship on depressive symptoms, self-rated health and life satisfaction was estimated by the multiple regression model (see Table 2). A bootstrapping approach (Preacher & Hayes, 2008) was used to test the hypothesis that satisfaction with the family relationship mediates the relationship between current QR adult children caregiver-parents with AD and the dependent variables.

Table 2

Mediation Model of Quality of Relationship Between Adult Children Caregivers-Parents With Dementia, Satisfaction With Family Relationship and Indicators of Well-Being (Depressive Symptoms, Life Satisfaction and Self-Rated Health)

| Model ^a | Coeff. | SE | p | 95% CI | |
|---|---------|--------|--------|---------|---------|
| | | | | LL | UL |
| 1. Depressive symptoms | | | | | |
| a: QR adult children caregiver-parents with AD → SF | .3263 | .0409 | < .001 | .2461 | .4065 |
| b: SF → depressive symptoms | -4.5559 | .3730 | < .001 | -5.2883 | -3.8235 |
| c: Total effect | -2.0911 | .4474 | < .001 | -2.9695 | -1.2126 |
| c': Direct effect | -.6044 | .4250 | .1554 | -1.4388 | .2300 |
| Indirect effect | -1.4867 | .2393 | | -1.9672 | -1.0566 |
| 2. Life satisfaction | | | | | |
| a: QR adult children caregiver-parents with AD → SF | .3263 | .0409 | < .001 | .2461 | .4065 |
| b: SF → life satisfaction | 1.8399 | 1.8399 | < .001 | 1.5438 | 2.1360 |
| c: Total effect | .9684 | .1809 | < .001 | .6133 | 1.3234 |
| c': Direct effect | .3680 | .1718 | .0326 | .0306 | .7053 |
| Indirect effect | .6004 | .0996 | | .4162 | .8055 |
| 3. Self-rated health | | | | | |
| a: QR adult children caregiver-parents with AD → SF | .3263 | .0409 | < .001 | .2461 | .4065 |
| b: SF → self-rated health | 2.521 | .0299 | < .001 | .1934 | .3109 |
| c: Total effect | .1083 | .0342 | .0016 | .0411 | .1755 |
| c': Direct effect | .0261 | .0341 | .4448 | -.0409 | .0930 |
| Indirect effect | .0823 | .0160 | | .0535 | .1168 |

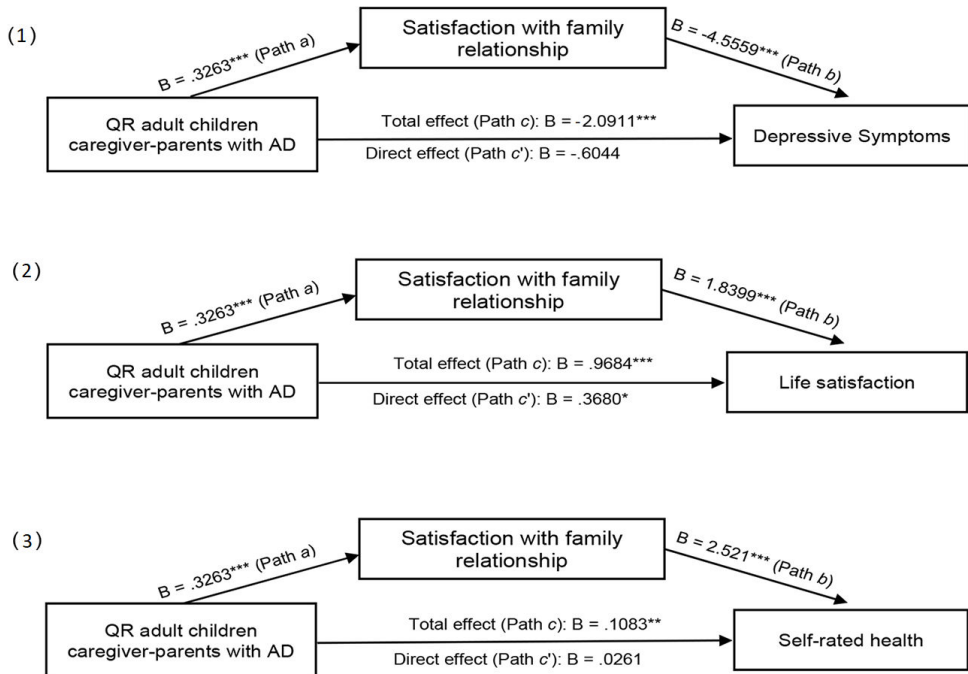
Note. AD = Alzheimer's disease; QR = Quality of Relationship; SF = satisfaction with family relationship; SE = standard error; BC = bias-corrected; CI = confidence interval; Number of bootstrap samples for bootstrap confidence intervals: 5,000.

^a $R^2 = .0820$. $F = 63.8116$, $p < .001$.

See Figure 1 for a graphic representation of the path model.

Figure 1

Graphic Representation of the Path Model



Depressive Symptoms

In the model with current QR adult children caregiver-parents with AD as the independent variable, satisfaction with family relationship as the mediator, and symptoms of depression as the dependent variable (see Figure 1 (1)), current QR was positively associated with satisfaction with family relationship ($B = .3263$, $p < .001$, 95% CI [.2461, .4065]). The satisfaction with family relationship was negatively associated with symptoms of depression ($B = -4.5559$, $p < .001$, 95% CI [-5.2883, -3.8235]) after controlling for QR. The total effect of the current QR adult children caregiver-parents with AD on depressive symptoms was negative ($B = -2.0911$, $p < .001$, 95% CI [-2.9695, -1.2126]). However, when controlling for the mediator ($B = -.6044$, $p = .1554$, 95% CI [-1.4388, .2300]) it was not significant. A bootstrap confidence interval for the indirect effect (-1.4867) based on 5,000 bootstrap samples was above zero (95% CI [-1.9672, -1.0566]). This suggests that among adult children caring for parents with dementia, relationship quality was inversely associated with caregiver depressive symptoms, and this relationship was fully mediated by satisfaction with family relationships.

Satisfaction With Life

The second model (see Figure 1 (2)) evaluated the association between current quality of relationship of adult children caregiver-parents with AD, satisfaction with family relationship and satisfaction with life. The simple mediation model indicated that the current QR adult children caregiver-parents with AD was positively associated with SF ($B = .3263, p < .001, 95\% \text{ CI } [.2461, .4065]$), and SF was positively associated with satisfaction with life ($B = 1.8399, p < .001, 95\% \text{ CI } [1.5438, 2.1360]$) after controlling for quality relationship. Furthermore, current QR adult children caregiver-parents with AD was positively associated with life satisfaction ($B = .9684, p < .001, 95\% \text{ CI } [.6133, 1.3234]$). However, when controlling for the mediator, the correlation was reduced ($B = .3680, p < .05, 95\% \text{ CI } [.0306, .7053]$). There was no zero in the 95% bias corrected bootstrap confidence interval for the indirect effects (see Table 2). These results suggest that a partial mediation occurred and that that current QR adult children caregiver-parents with AD had a direct effect on the level of life satisfaction independent of satisfaction with family relationship.

Self-Rated Health

In the model with self-rated health as the dependent variable (see Figure 1 (3)), current quality of relationship adult children caregiver-parents with AD was positively associated with satisfaction with family relationship ($B = .3263, p < .001, 95\% \text{ CI } [.2461, .4065]$). The satisfaction with family relationship was positively associated with self-rated health ($B = .2521, p < .001, 95\% \text{ CI } [.1934, .3109]$) after controlling for current QR. The total effect of the current adult children caregiver's perceptions of relationship quality with their parents with AD on self-rated health was significantly positive ($B = .1083, p < .01, 95\% \text{ CI } [.0411, .1755]$). However, when controlling for the mediator ($B = .0261, p = .4448, 95\% \text{ CI } [-.0409, .0930]$) it was not significant. A bootstrap confidence interval for the indirect effect (.0823) based on 5,000 bootstrap samples was entirely above zero (95% CI [.0535, .1168]). This suggests that among adult children caring for parents with dementia, current QR adult children caregiver-parents with AD was associated with self-rated health, and that this relationship was fully mediated by satisfaction with family relationships.

Discussion

The primary findings of this study conclude that higher current quality of relationship of adult children caregivers-parents with dementia relates to higher satisfaction with family relationships, which in turn relates to (Hypothesis 1) lower depressive symptoms, (Hypothesis 2) better life satisfaction, and (Hypothesis 3) better self-rated health. The relationships between caregiver-rated quality of relationship and both depressive symp-

toms were fully mediated by relationship satisfaction, suggesting that satisfaction with family relationships is a primary mechanism by which these health outcomes are related to quality of relationship among dementia caregivers. The relationship between caregiver-rated quality of relationship and life satisfaction was partially mediated by satisfaction with family relationship, suggesting that additional, unidentified mechanisms may yet be identified by future research.

These findings are consistent with previous results which stated that both satisfaction with family relationship (Bastawrous, Gignac, Kapral, & Cameron, 2015; La Fontaine & Oyeboode, 2014; Quinn et al., 2009; Thomas, Liu, Umberson, & Sutor, 2017) and caregiver-rated current quality of relationship (Ablitt, Jones, & Muers, 2009; Campbell et al., 2008; Lawrence et al., 1998; Rippon et al., 2020) influence well-being and capacity for continued care. These results further identify relational variables as key elements of the stress. Stressors and social support are core components of the Stress Process Model (Pearlin et al., 1990), which argues that stress can undermine mental health while social support may serve as a protective resource. As argued by Lazarus and Folkman (1984), however, coping responses may be effective with respect to the type of outcomes under investigation and also are influenced by background, past experiences, culture/ethnicity, and personality.

Current research suggests that positive ties with parents are a critical source of support for adult children caregivers and may alleviate the experience of elevated depressive symptoms. A scoping review (Bastawrous et al., 2015) concluded that greater social support and higher quality parent-child relationships were associated with better well-being. Furthermore, higher quality relationships involve secure attachment, cohesion, mutual emotional bond, greater family satisfaction and positive interactions with parents (Carpenter, 2001; Ward-Griffin, Oudshoorn, Clark, & Bol, 2007). Likewise, positive family dynamics (e.g. expressions of affection, higher cohesion and involvement of the care recipient in family activities) contribute to the functionality of the dyad (Mitrani et al., 2006).

The questionnaire items using QR and SF have been used in past qualitative research examining how patterns of isolation and family conflict among caregivers precipitate adverse outcomes with respect to psychosocial well-being and subjective health (Falcão, 2012; Neumann, Dias, & Falcão, 2016). Among the various sources of this distress are conflict over management of financial resources, miscommunication or disbelief about an impaired parent's level of functioning, and poor cohesion among family members (Falcão & Bucher-Maluschke, 2010; Falcão et al., 2016). Past work has found that dementia caregivers experience more stress, depression, and overall worse medical health outcomes than their non-caregiving peers (Laks et al., 2016). In contrast, the high quality of family relationships may promote well-being through a greater sense of self-esteem and could be a psychological resource, encouraging positive affect, optimism, and better mental health (Thomas et al., 2017). Establishing mechanistic relationships among these varia-

bles requires the use of quantitative data and statistical modeling. This study bridges the conceptual gap between family-related stress with both psychosocial (depression and life satisfaction) and subjective health outcomes among Brazilian dementia caregivers.

The present study has several practical implications. For example, emerging dementia caregiver support interventions may characterize the quality of the caregiver-care recipient relationships as one source of remediable distress. Many of the 200-plus caregiver interventions are considered “evidence based” and many effect general improvements in caregiver distress (Gitlin, Marx, Stanley, & Hodgson, 2015). Most of these interventions incorporate psychoeducation about the clinical trajectory of dementia and instruct caregivers in basic behavioral strategies to facilitate symptom management. Fewer of these interventions directly address household social dynamics. Similarly, SF may be considered in future interventional research, although the quality of the adult children caregiver-parent relationship is most likely the outcome of a circular process in which caregiver and patient mutually influence one another. It may be that, to some degree, existing caregiver interventions may affect symptom reduction by strengthening SF in parent-child caregiving dyads. It may also be that caregiver outcomes may be improved by modifying existing interventions to focus on caregiving dyad relational variables.

Limitations

This study presents some limitations which will require future research. The primary hindrance of this study is the use of a convenience sample. In general, by contrast to the broader population of dementia caregivers in Brazil, participants in this study were quite well-educated, had internet access, and likely had greater access to professional and domestic services. A second disadvantage of this study is the use of single items to assess relationship quality and satisfaction. The use of these items reflects the absence of well-normed Portuguese language measures of relationship quality and satisfaction, and future research may seek to develop consistent measures of these variables. Furthermore, the mediation models tested are simple and limited, which means there could be other mediating and moderating factors affecting the relationship between quality of relationship among the adult children caregivers and parents with dementia and well-being of caregiver. The final limitation of the study is the use of cross-sectional data. Caregiving relations between adult caregivers and their parents develop over the lifespan. A better approach to studying the challenges to these relationships as sources of adaptive flexibility and strength would be to employ longitudinal data. However, collection of a multi-year longitudinal dataset was beyond the scope of this data collection.

Conclusion

In conclusion, it is to our knowledge that this study was the first to identify psychosocial mechanisms of the relationship between current relationship quality, satisfaction

with family relationship, and Brazilian caregiver outcomes. It is crucial to study these social dynamics, given the decision-making responsibilities of informal caregivers with respect to vital health, as well as social and financial decisions. Given the increasing need for informal dementia caregiving and the recognition that caregiving related stress presents adverse health outcomes, it is important to understand the processes that shape the quality of parent-adult child caregiver relations. These findings are a step toward quantifying the link between caregiving relationships and caregiver health outcomes. It is likely that quantification of the relationship among relationship quality and outcomes will demand additional psychometric and theoretical work, although future work may identify benefits of delineating these facets of adult development, as well as challenges with respect to healthcare outcomes.

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