CLINICAL INVESTIGATION

Longitudinal effects of ambivalent and guilt feelings on dementia family caregivers' depressive symptoms

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Abstract

Background: The world prevalence of people with dementia is increasing. Most of the care received by people with dementia is provided by family caregivers, and this prolonged activity has a significant impact on caregivers' levels of depression. Stressors and frequency of leisure are known predictors of caregivers' depressive levels. The longitudinal impact of caregivers' ambivalent and guilt feelings is unknown.

Methods: Participants were 177 family caregivers of relatives with dementia who were assessed three times during a 2-year period. In addition to demographic variables, psychological symptoms of the dementias, and frequency of leisure activities, caregivers' ambivalent feelings, guilt, and depressive symptoms were measured. The longitudinal association of changes in these variables with changes in caregivers' depressive symptoms over time was assessed using mixed linear models.

Results: Changes over time in the assessed variables predicted 48.05% of variance of changes over time in depressive symptoms. Even when variables strongly associated with increased depressive symptoms were controlled (lower caregivers' age and educational level, higher reaction to BPSD, and lower leisure activities), increases in ambivalence and guilt contributed to an increase of 9.22% of the variance of changes depressive symptoms over a 2-year period. The effects of ambivalent feelings on depression are indirect, mediated by guilt feelings. Cessation of caregiving do not seem to alter these findings.

Conclusions: Caregivers' ambivalent and guilt feelings are significant predictors of caregivers' mental health. Caregivers may significantly benefit from

early detection of ambivalent and guilt feelings and preventive strategies targeting triggers associated with ambivalent and guilt symptoms.

INTRODUCTION

The world prevalence of people with dementia is increasing.[1] Most of the care received by people with dementia is provided by family caregivers.[2] Caring for a relative that has dementia has been considered a prototypical example of chronic and extreme stress,[3] related with significant negative outcomes such as depression. The meta-analysis by Collins and Kishita[4] shows a 31.24% prevalence rate for depression in dementia family caregivers. Dementia family caregivers of people with dementia endorse significantly higher depressive symptoms than noncaregivers, with a large percentage of caregivers showing clinically significant levels of depressive symptoms (40%) compared with non-caregivers (5%).[5]

Although the caregiving process has usually been associated with negative situations and outcomes (e.g., stress, burden, anxiety, and depression), there are also positive issues associated with caring for a relative with dementia. First, many caregivers report positive emotions associated with care, such as spiritual and personal growth, increased faith, and feelings of accomplishments and mastery.[6] However, given the stressful and unpredictable nature of the caregiving situation, it is common for caregivers to simultaneously feel both positive emotions (e.g., love) and negative emotions (e.g., rage).[7] The interest in analyzing ambivalent feelings in the context of caregiving is quite recent, with cross-sectional studies suggesting that ambivalence is an important contributor to caregivers' depression.[8,9]

Another variable that is receiving a wider attention in caregiving research is guilt. As mentioned, caregiving usually takes place in a context of love for a relative. But there are several factors related with the dementia illness (e.g., behavioral and psychological symptoms of the dementias; BPSD) and the caregiving context (e.g., guilt derived from caregivers actions, neglecting other significant areas such as family life or work)[10] that have a significant impact on caregivers' emotions, generating guilt.[11] As suggested by previous cross-sectional data, the occurrence of BPSD is significantly associated with caregivers' report of ambivalent and guilt feelings,[9] an association that has been replicated in countries such as Spain and United Kingdom.[12] Although it seems clear that guilt feelings are related with caregivers depression, longitudinal

Key points

- Ambivalent and guilt feelings may be longitudinally relevant for understanding caregivers' depression.
- This study shows that longitudinal variation in caregivers' ambivalent and guilt feelings were positively associated with variation in depressive symptoms even when known predictors of depression are considered (e.g., reaction to BPSD and leisure).
- Ambivalent and guilt feelings are important variables that should be included in assessment protocols aimed at identifying vulnerability factors in dementia family caregivers, and considered as targets for interventions aimed at decreasing caregivers' distress.

Why does this paper matter?

Caring for a relative with dementia has been considered a prototypical example of chronic and extreme stress, related with significant negative outcomes such as depression. Given the stressful and unpredictable nature of the caregiving situation, that includes facing the behavioral and psychological symptoms of the dementias (BPSD), it is common for caregivers to simultaneously feel positive (e.g., love) and negative emotions (e.g., rage). Experiencing negative emotions like rage towards a loved one may increase the chances of experiencing guilt feelings, that are very distressing for caregivers. This study shows that both caregivers' ambivalent and guilt feelings longitudinally covary with caregivers' levels of depressive symptoms. The findings suggest that assessing and treating caregivers' emotional ambivalence and guilt feelings may contribute to improve dementia family caregiver well-being.

predictors of guilt feelings, as well as the longitudinal association between guilt and depression, is lacking. Recent cross-sectional data suggest that ambivalent

feelings are associated with guilt feelings, and this association contributes significantly to depressive symptoms.[9] This cross-sectional data guides the current study, aimed at providing support for the longitudinal association between ambivalent and guilt feelings and depressive symptomatology in dementia family caregivers.

Both ambivalent and guilt feelings are frequent emotions experienced by caregivers but, as they may be stigmatized, they might also be under-reported. As mentioned by Gallego-Alberto et al.,[10] many caregivers report experiences close to guilt (e.g., anger or grief), but explicitly deny that they feel guilt. Also, many caregivers do not engage in adaptive coping strategies (e.g., leisure) in order to avoid negative feelings such as ambivalence or guilt. In other words, guilt feelings might not happen because they are avoided, preventing adaptive behaviors.

There is a wealth of research demonstrating other possible causes for depression in family caregivers of persons with dementia. Caregivers provide care for long periods of time (i.e., years), and devote many daily hours to care tasks. One of the most stressful aspects of caregiving is facing behavioral and psychological symptoms of the dementias (BPSD), such as aggressive behaviors, irritability, or anger. Most people with dementia show BPSD, with more than 75% showing several concurrent behaviors.[13] This prolonged stress has a significant impact on caregivers' levels of depression.[14] However, although different caregivers may be exposed to similar demands and stress, not all of them report significant levels of distress. As explained by the empirically supported stress and coping model,[15,16] the effect of stressors on people's mental health is not direct. Contextual or demographic variables (e.g., caregivers' gender or educational level) or caregivers' resources such as coping strategies or social support, can buffer the effect of the stressors on caregivers' depression. One of the most widely studied coping variables is behavioral activation (including leisure) of the caregiver, with longitudinal[17] and intervention studies[18] showing the significant impact of this variable on depressive symptomatology.

Drawing upon the stress and coping model, through this study we hope to show that ambivalent and guilt feelings are longitudinally relevant for understanding caregivers' depression, above-and-beyond known stressors (BPSD) or coping strategies (leisure). The longitudinal association of caregivers' ambivalent and guilt feelings on caregivers' depressive symptomatology has not been studied until now. In this work we present the data from the Madrid Caregiving Longitudinal Study (CARE-LONG). The objective of this study is to analyze if variation in ambivalent and guilt feelings over time are significantly relevant for understanding the worsening of caregivers' mental health (higher levels of depressive symptomatology). Specifically, and drawing upon the stress and coping model, we hypothesize that increases in ambivalent and guilt feelings will be significantly associated with increases in depressive symptoms after controlling for known predictors.

METHODS

Participants and procedure

Participants in this study were family caregivers of a relative with dementia. The inclusion criteria for participating were being aged 18 years or older, identify themselves as the main provider of care to a relative diagnosed with Alzheimer's disease or related disorders, providing care for at least 7 weekly hours, and having provided care for at least three consecutive months. The exclusion criteria were receiving or having received in the last year psychological therapy and having physical (e.g., cancer) or mental health problems (e.g., schizophrenia) that may interfere with the participation in the study. All participants were recruited from health and social care centers from the Madrid Community (Spain). Contact with the caregivers was facilitated by professionals from the collaborative centers. A first telephone call was made to confirm that participants met the inclusion and exclusion criteria. Then, a follow-up interview was conducted in which a psychologist individually assessed each caregiver using the study assessment protocol. At the beginning of this interview caregivers were asked to sign the informed consent. The informed consent described the main characteristics of the study, including the request to participate in individual assessments that took place during a 2-year period, with one interview per year (T0: baseline; T1: first year assessment; and T2: second year assessment). The Madrid CARE-LONG Study begun in January 2015. All the assessments were face to face until the outburst of the COVID-19 pandemic, in March 2020. No interviews were done between March 2020 and May 2020. From June 2020 until the final recruitment (September 2022) all the interviews were done through telephone. The study protocol was approved by the Ethics Committee of the Universidad Rey Juan Carlos of Madrid (registration code: 020202017620).

Measures

Outcome variable

Depressive symptoms. Depressive symptoms were measured using the Spanish version[19] of the Center for Epidemiologic Studies Depression Scale (CES-D).[20] It

consists of 20 items that assess the frequency caregivers felt depressive symptoms during the previous week (e.g., "I felt sad"; "I cried sometimes"). The answers to the items ranged from 0 (rarely or never—less than 1 day) to 3 (most or all of the time—5–7 days) on a Likert-type scale. Cronbach's alpha coefficient for this scale was 0.89 in this study.

Primary independent variables

Ambivalence. Caregivers' ambivalent feelings were measured using the Caregiving Ambivalence Scale.[7] This is a 5-item scale that assesses the degree to which caregivers experience mixed or conflicted emotions towards their relative. Participants are asked to select the option that best describes their feelings (e.g., "I have mixed feelings towards my relative [tenderness-rage, love-hate, etc.]") using a Likert type scale that ranges from 0 ("never") to 3 ("always"). Cronbach's alpha coefficient for this scale was 0.76 in this study.

Guilt. Guilt feelings were assessed with the Caregiver Guilt Questionnaire (CGQ).[21] This instrument is composed by 22 items with a Likert-type response ranging from 0 ("never") to 4 ("always") assessing the frequency caregivers felt guilty about several aspects of the caregiving task over the past few weeks (e.g., I have felt guilty about the way I've sometimes behaved with my relative). Cronbach's alpha coefficient for this scale was 0.85 in this study.

Covariates

In addition to sociodemographic data (caregivers' age, sex, and educational level—without formal education, basic, secondary, or high school education), caregivers were asked at each yearly assessment if they continued being the caregiver of their relative. Answers to this question were coded as 0 "care continues" and 1 "care cessation." The assessment format (face-to-face interview or telephone interview) was also considered and coded as 0 "face to face" and 1 "telephone."

Information about the care-recipients was also gathered. We assessed the diagnosis (Alzheimer disease and other related disorders) and the cognitive and functional status of the care-recipient, through the Global Deterioration Scale (GDS)[22] and the Barthel Index,[23] respectively.

Frequency and reaction to BPSD. The Spanish version[24] of the Revised Memory and Behavior Problems Checklist (RMBPC)[25] was used. It is a 24-item scale (e.g., "Asking the same question over and over"). The frequency subscale assesses how often the care-recipient shows BPSD and the reaction subscale measures

caregivers' reaction to them. The first is a four-point scale ranges from 0 (never occurred) to 4 (occurs daily or more often) and the second scale (e.g., "how much has this behavior upset you?") ranges from 0 (not at all) to 4 (extremely). The internal consistency (Cronbach's α) in this study was 0.76 for the frequency subscale, and 0.87 for the reaction subscale.

Frequency of leisure activities. Frequency of leisure was measured with an adaptation of the Leisure Time Satisfaction Scale.[26] This is a 6-item scale that measures caregivers' frequency of engagement in 6 different leisure activities over the previous month (e.g., "How often have you participated in hobbies or other interests"). Answers were coded as: 0 = no; 1 = a bit; 2 = a lot. For the present study, Cronbach's alpha was 0.72.

Data analysis

First, means, standard deviations, and range of the assessed variables were computed. An analysis including time as predictor of changes in depressive symptoms over time was run. Then, to analyze the longitudinal relationship between changes in ambivalent and guilt feelings and changes in depressive symptoms, a series of hierarchical linear mixed models was conducted using SPSS. Drawing upon the stress and coping model adapted to caregiving,[16] sociodemographic and stressors (cognitive and functional status, and BPSD) were controlled (model 1). As the association between BPSD and frequency of leisure activities and depression is already known (model 2), different models were tested adding ambivalence (model 3) and guilt (model 4) as predictor variables in order to analyze the percentage of variance of changes in depressive symptoms associated to each of these variables, following the rationale set out in Losada et al.[9] As the findings suggested a potential mediation effect of guilt in the association between changes in ambivalence scores and changes in depressive symptomatology, a Sobel test was performed. Caregivers' gender, age and educational level were included as time invariant variables. Frequency and reaction to behavioral problems, leisure activities, ambivalence, guilt, and depressive symptoms were included as time varying variables. All variables were centered to the mean (grand mean) except for the outcome variable (depressive symptoms). Predictor variables assessed at each timepoint were entered as time-varying covariates in the model. Participants were included as a random factor. The significance of each model was tested through the likelihood ratio test. In addition, the pseudo R^2 was computed[27] for each model to obtain the percentage of variance explained by each tested model.

RESULTS

Attrition

A total of 348 caregivers of a relative with dementia were initially contacted for screening. Of these participants, 40 individuals were impossible to reach after the first phone call, 46 did not meet the inclusion criteria, and 85 declined to participate in the study. Baseline data (T0) were available for 177 caregivers. As shown in Figure 1 (flow of the study), 1-year (T1) follow-up data were available for 140 caregivers, and 2-year (T2) follow-up data were available for 124 caregivers. Regarding the 140 participants in T1, 77.1% ($n = 108$) were still primary caregivers and 22.9% ($n = 32$) were no longer caregivers due to institutionalization of the CR ($n = 11$), death of the CR ($n = 13$), or other reasons (e.g., another relative took the CG role, $n = 8$). Regarding the 124 participants in T2, 62.9% ($n = 78$) were still primary caregivers and 37.1% ($n = 46$) were no longer caregivers due to institutionalization of the CR ($n = 19$), death of the CR ($n = 23$) or other reasons ($n = 4$).

Sample characteristics

Table 1 show sample characteristics at T0. As seen, most of the participants were female (65.0%), and the sample mean age was 62.6 years (SD = 12.1). Participants mean number of hours caring per day was 13.35 (SD = 8.2), and mean length of care was 53.7 months (SD = 41.8). Most of the participants were caring for a relative with Alzheimer's disease (57.6%).

Longitudinal analysis

A first analysis just including time as predictor of changes in depressive symptoms over time was not significant (estimate = -0.70; SE = 0.41; df = 267.56; $p = 0.09$), suggesting that there were no general changes in depressive symptoms over time for the whole sample. Then, as shown in Table 2 (model 1), the inclusion of sociodemographic variables and stressors (BPSD frequency and reaction) explained 23.06% of the variance in depressive symptoms over time. Although not shown (data available upon request to the corresponding author), increases in frequency of BPSD were associated with increases in reaction to BPSD. Cognitive status and functional status were not significantly related to depressive symptoms and were subsequently not included to maintain parsimony and power (the full model with these variables can be requested from the corresponding author). As shown in Table 2, younger participants, those with lower formal education, and those reporting increased reaction to BPSD reported increases in depressive symptoms.

Frequency of leisure activities was included in model 2, and explained an additional 15.77% of the variance in depressive symptoms. Specifically, decreases in leisure activities were significantly associated with increases in depressive symptoms.

Model 3 includes ambivalence. As shown in Table 2, variation in ambivalent feelings were positively associated with variation in depressive symptoms, even when other significant variables were controlled (e.g., BPSD and leisure). Adding ambivalence to the model that already included sociodemographic, stressors and leisure variables explained an additional 3.34% ($p < 0.01$) of the variance in depressive symptoms over time.

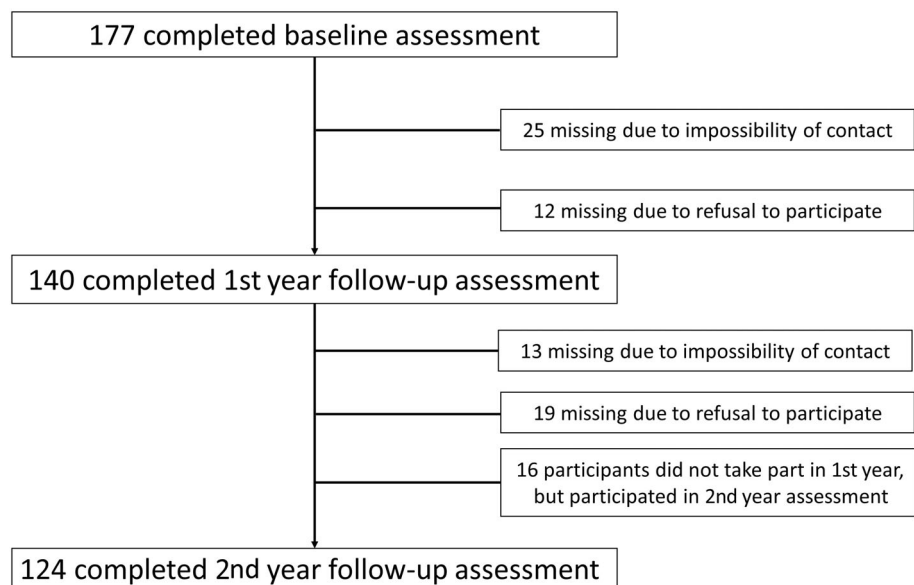Guilt is included in the final model (model 4). Over time, increases in guilt symptoms are associated with

FIGURE 1 Flowchart of the study.

TABLE 1 Sample characteristics at baseline ($n = 177$).

Variable	Mean (SD) or percentage (n)	Scale range
Female sex, %	65.0 (115)	
Caregivers' age	62.6 (12.08)	32–87
Time caregiving, months	53.7 (41.79)	3–300
Daily hours caregiving	13.4 (8.22)	1–24
Educational level, %		
Without formal education	3.4 (6)	
Basic education	11.9 (21)	
Secondary education	18.6 (33)	
High school education	27.7 (49)	
University degree	35.6 (63)	
Master/PhD	2.8 (5)	
Care-recipient's diagnosis		
Alzheimer's disease	57.6 (102)	
Other cognitive disease	41.2 (73)	
Global Deterioration Scale	4.7 (1.24)	2–7
Barthel Index	70.1 (26.80)	0–100
Frequency BPSD	33.4 (12.35)	0–96
Reaction BPSD	17.8 (14.74)	0–96
Frequency leisure activities	6.2 (2.85)	0–12
Ambivalence feelings	3.8 (3.31)	0–15
Guilt feelings	18.6 (11.49)	0–88
Depressive symptoms	16.0 (10.76)	0–60

Abbreviation: BPSD, behavioral and psychological symptoms of dementia.

increases in depressive symptoms, even when other relevant variables were controlled. Adding changes in guilt symptoms over time to the model explained an additional 5.88% ($p < 0.01$) of the variance in depressive symptoms. Interestingly, the significant association between ambivalent symptoms and depressive symptoms disappeared after guilt was introduced in the model, suggesting a potential mediation effect of ambivalent feelings on depressive symptoms through guilt, that is tested below.

Taken together, increases in ambivalent and guilt feelings explain an additional 9.22% of increases in depressive symptoms over time, once controlling for known predictors of depressive symptoms in family caregivers. As shown in Table 2, the final model explains 48.05% of the variance in depressive symptoms over time.

Relative contributions of guilt and ambivalence to depressive symptoms

In Table 2, Model 4, the intercept (17.65) represents the average score in depressive symptoms when all the other variables in the model are 0 or the mean. So, in Model 4, for every one point increase in guilt feelings, depression score changes 0.20 points. Considering the standard deviation of guilt feelings at baseline (11.49, see Table 1), a one standard deviation change in guilt was associated with a change of 2.30 points in depressive symptoms (see Figure 2). By way of comparison, a one standard deviation change in reaction to BPSD was associated with an increase of 1.77 points in depressive symptoms. An increase of one standard deviation in ambivalent feelings was associated with an increase of 0.99 points in depressive symptoms. The highest change in depressive symptoms is related with an increase of one standard deviation in leisure, which was associated with a decrease of 3.42 points in depressive symptoms. So, considering these results, and as shown in Figure 2, the strongest contributor to depressive symptoms through time is leisure, followed by guilt feelings, reaction to BPSD, and ambivalence.

Mediator effect of guilt in the association between ambivalence and depressive symptomatology

As mentioned earlier, the significant effect of changes in ambivalent feelings over time on changes in depressive symptomatology disappeared after controlling for guilt feelings. A significant Sobel test was obtained ($Z = 4.38$; $p < 0.01$), showing a mediation effect of guilt in the association between ambivalent feelings and depressive symptoms. Increases in ambivalent feelings (love-rage) were associated with increases in guilt feelings, which in turn were associated with increases in depressive symptoms.

DISCUSSION

The objective of this study was to analyze the longitudinal association between changes in ambivalent and guilt feelings over time and changes in depressive symptoms in dementia family caregivers, controlling for known predictors of depressive symptoms. The variables included in the obtained model explained almost 50% of the variance in depressive symptoms over time. Although the scores in depressive symptoms remained stable through the study period (2 years), as expected, over time increases in reaction to BPSD, and decreases in leisure activities, were associated with significant increases in depressive symptoms, findings that are not new in the scientific literature.[28,29] In addition, being a younger caregiver and having less formal education was associated with increases in depressive symptoms across time. Neither changes in cognitive and functional status nor frequency

TABLE 2 Longitudinal predictors of changes in depressive symptoms.

	Model 1			Model 2			Model 3			Model 4		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	15.14	1.70	8.92***	16.90	1.60	10.59***	17.22	1.57	10.96***	17.65	1.53	11.50***
Time	−0.02	0.8	−0.03	−0.44	0.55	−0.80	−0.50	0.54	−0.93	−0.38	0.53	−0.72
CG sex (0 = female)	−1.65	1.30	−1.27	−0.99	1.19	−0.83	−0.71	1.18	−0.61	−1.23	1.14	−1.08
CG age	−0.20	0.06	−3.47***	−0.18	0.05	−3.38***	−0.15	0.05	−2.93***	−0.10	0.05	−1.91
Education level	−1.26	0.44	−2.87***	−0.91	0.41	−2.24*	−0.92	0.40	−2.32*	−0.99	0.39	−2.56**
Care cessation (1 = yes)	1.57	1.51	1.04	−0.54	1.44	−0.37	−1.02	1.42	−0.72	−1.34	1.39	−0.97
Interview (0 = face to face)	−0.64	1.28	−0.50	−1.17	1.20	−0.97	−1.15	1.18	−0.97	−0.76	1.16	−0.65
BPSD—Frequency	0.02	0.05	0.36	0.03	0.05	0.63	0.02	0.05	0.44	0.02	0.04	0.55
BPSD—Reaction	0.20	0.05	4.23***	0.19	0.04	4.38***	0.15	0.04	3.45***	0.12	0.04	2.83***
Frequency leisure activities				−1.27	0.16	−7.79***	−1.25	0.16	−7.79***	−1.20	0.16	−7.67***
Ambivalence							0.63	0.16	3.91***	0.30	0.17	1.77
Guilt										0.20	0.04	4.63***
−2LL	2758.27			2688.19			2668.91			2652.48		
Chi-square change	385.49	**		70.08	**		19.28	**		16.43	**	
PsR2	23.06			15.77			3.34			5.88		
Acum	23.06			38.83			42.17			48.05		

Note: Score ranges at baseline: BPSD—Frequency (0–93); BPSD—Reaction (0–72); frequency of leisure activities (0–12); ambivalence (0–15); guilt (0–66); depressive symptoms (0–45).

Abbreviations: BPSD, behavioral and psychological symptoms of dementia; CG, caregiver; SE, standard error.
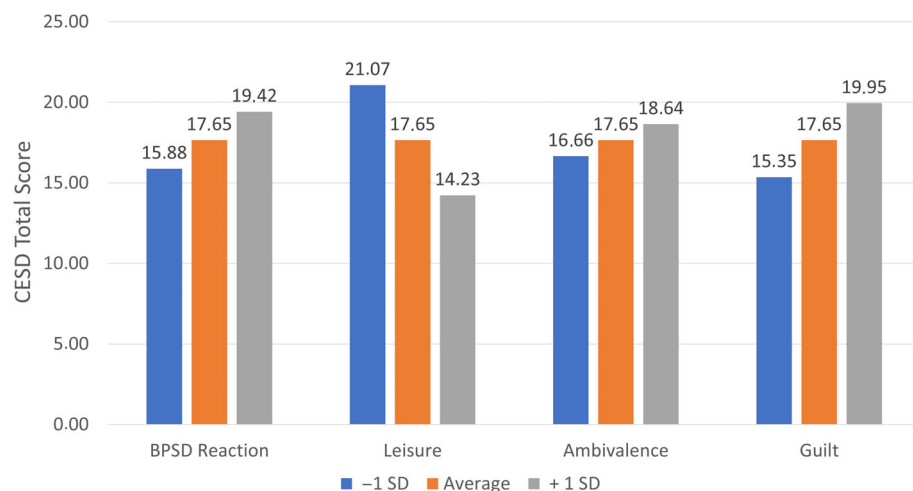
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

FIGURE 2 Relative impact of tested predictors on average depressive symptoms through time. BPSD, behavioral and psychological symptoms of the dementias; CESD, Center for Epidemiologic Studies Depression Scale; SD, standard deviation.

of BPSD were significantly associated with increases in depressive symptoms in this study. These findings seem to suggest that the variables that contribute most to increases in depressive symptoms are not care-recipient variables, but caregivers' resource (e.g., leisure) and subjective variables (e.g., reaction to BPSD, ambivalence, and guilt).

Regarding the specific role of ambivalent and guilt feelings, over time increases in caregivers' ambivalent and guilt feelings were also significantly associated with increases in depressive symptoms. The findings suggest that the obtained association is clinically relevant for understanding caregivers' worsening in depressive symptoms, as the addition of ambivalent and guilt feelings to the model explained a significant percentage of variance in depressive symptoms even when known predictors of depression are considered (e.g., reaction to BPSD and leisure). In terms of the specific contributions, engagement in leisure activities was the strongest contribution to depressive symptoms, followed by increases in guilt, reaction to BPSD and ambivalent feelings. The contribution of guilt and ambivalent feelings is also theoretically relevant, suggesting that both variables should be considered in empirically supported theoretical models aimed at understanding caregivers' mental health, such as stress and coping models.[16]

Having negative emotions towards a loved one generates ambivalent feelings in caregivers, that may be perceived as aversive or unforgivable,[10] and could generate guilt feelings. The obtained mediation effects of guilt feelings in the association between ambivalence and depressive symptoms, that are in line with the previous cross-sectional study of Losada et al.,[9] suggest that ambivalent feelings may be a significant trigger of feelings of guilt, and that the combined effect of both variables explain a significant proportion of an increase of depressive symptoms.

The results provide additional support to the known impact of BPSD in caregivers' depression. It is a context that facilitates the emergence of negative emotions (e.g., rage or anger) towards a loved one. Considering that caregivers depression increases the likelihood of mistreatment or abuse towards the care-recipient,[30] future studies should analyze the likelihood that ambivalent or guilt feelings could also be associated with mistreatment, together or independently with depressive feelings.

In terms of implications of the results for clinical practice, the current findings suggest that ambivalent and guilt feelings are important variables for understanding caregiver distress over time. Targeting ambivalent or guilt feelings in interventions for dementia family caregivers may help improve the effectiveness of interventions on caregiver distress levels.[31,32]

Future research is needed analyzing intervention strategies for targeting ambivalent and guilt feelings in dementia family caregivers. Interventions aimed to decrease the frequency and impact of BPSD on caregivers' distress[33] may be effective for reducing ambivalent, guilt, and depressive symptoms as they diminish the chances of appearance of negative emotions related with the care-recipient. Interventions may also include specific exercises or techniques addressing ambivalent and guilt emotions. These feelings may be directly targeted through psychoeducation about how dementia has a significant impact on the care-recipient personality, explaining differences between adaptive and maladaptive guilt, and learning how to manage guilt-related thoughts.[34] Interventions that include specific techniques devoted to promoting acceptance of unchangeable issues in the care-recipient (e.g., memory related BPSD) and understanding the importance of maintaining commitment with important areas of value of the caregivers (e.g., selfcare and social relations) may also reduce caregivers' distress in a clinically significant way.[35,36] Furthermore, exercises and

techniques aimed at improving the self-acceptance and more adaptive self-judgments may have potential for addressing guilt feelings derived from experiencing ambivalence towards the care-recipient.[37,38] Promoting self-compassion has been suggested as a protective factor against guilt[39] and other psychological problems such as prolonged grief.[40]

Our study has several limitations. First, the sample size may be considered small and longer follow-up times would be desirable. No gender differences have been found in the results, and in order to confirm the findings it would be recommended to have available larger samples with a higher proportion of male participants, or enough sample to be able to control for variables that are known to have an impact on caregivers' distress. One of these variables is kinship, with research suggesting that daughters may be an especially vulnerable group to guilt and depressive symptoms.[21,41] Kinship has been found to be a relevant variable for understanding differences in the relationship quality between caregivers and care-recipients.[42] The complexity of relationships in the caregiving context may need to be considered in future studies as it might help to understand the relationships between ambivalence, guilt, and depression in family caregivers. Also, participants were caregivers who agreed to participate and, so, may not be representative of the whole caregiving sample. Although the attrition rates obtained in this study are similar to those reported in other longitudinal studies done with dementia family caregivers, discontinuing participants may show a specific profile that could influence the obtained results. Finally, the assessment procedure changed from face-to-face assessments to telephone assessments due to the COVID-19 pandemic. Although this issue was controlled in the analysis, we cannot rule out the potential influence of other factors that, related with the pandemic, may have influenced the results (e.g., changes in the way that respite services such as day care were used by the families).

Despite the above-mentioned limitations, the longitudinal analysis of changes in ambivalent and guilt feelings on caregivers' depressive symptoms is novel, and the obtained findings suggest that caregiving related ambivalent and guilt feelings are important variables for understanding caregivers' distress. These variables should be included in assessment protocols aimed at identifying vulnerability factors in dementia family caregivers, and considered as targets for interventions aimed at decreasing caregivers distress.

AUTHOR CONTRIBUTIONS

Andrés Losada-Baltar and María Márquez-González designed the study and obtained funding for the study, analyzed the data, and wrote the first draft of the manuscript. Brent T. Mausbach had a main role in the data analysis and writing of the first draft of the manuscript. Rosa Romero-Moreno obtained funding for the study, helped with the collection of the data, and helped in the writing of the study. Lucía Jiménez-Gonzalo, Cristina Huertas-Domingo, José A. Fernandes-Pires, Samara Barrera-Caballero, Laura Gallego-Alberto, and Natalia Martín-María collaborated in the data collection and helped in the writing of the study. Javier Olazarán had a main role in the recruitment of the sample and revision of the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Some of the ideas and data appearing in the manuscript were presented at the International Psychogeriatric Association Congress that took place in Lisbon in June 2023.

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The sponsors played no role in the present study.

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