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## Factors associated with anger and anger expression in caregivers of elderly relatives

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**Objectives:** Anger is a common feeling among family caregivers of elderly dependents. However, this feeling has received less attention than other emotional effects of caring. This study measures anger in caregivers and analyzes its predictors.

**Method:** Trait anger and anger expression (expression-in, expression-out and expression index), caregiver and care recipient features, stressors (e.g. care demands and support), appraisal (e.g. burden) and resources (e.g. coping, self-efficacy) were assessed in 111 caregivers of elderly dependent relatives. Staged stepwise multiple linear regression analyses were carried out for each of the four anger scores.

**Results:** Caregivers presented mild anger levels and showed expression-in rather than expression-out of anger. Stepwise multiple linear regression analyses showed that a bad relationship between caregiver and care recipient, the presence of disruptive behaviors and caregivers' low efficacy to handle them, and mostly the use of emotion-focused coping were the significant predictors of trait anger, anger expression index and anger expression-out. Explained variance for each of these regression models was 38%, 33% and 27%, respectively. Burden was the only significant predictor for internal anger expression (8% explained variance).

**Conclusion:** Results highlight that interventions aimed to improve caregivers' strategies to address memory and behavior problems and to promote the use of effective coping strategies could be helpful to prevent anger and expression-out of anger. Reducing burden in caregivers might result in reductions of anger expression-in. Data underscore the need to consider anger feeling and both in-expression and out-expression of anger separately in order to understand anger experience in caregivers.

**Keywords:** caregiving; family caregiver; anger expression; anger trait; coping

### Introduction

Research has already overwhelmingly shown that caregiving for dependent elderly subjects generates emotional and physical distress on relatives (Pinquart & Sörensen, 2003; Vitaliano, Schulz, Kiecolt-Glaser, & Grant, 1997). When the negative emotional effects of caregiving are analyzed, authors tend to emphasize the high risk of anxiety and depression (Pinquart & Sörensen, 2003); thus anger-related problems are relatively understudied, even though several researchers have shown that anger is commonly experienced among family caregivers (Anthony-Bergstone, Zarit, & Gatz, 1988; Gallagher, Wrabetz, Lovett, DelMaestro, & Rose, 1989). This lack of interest could be related with caregivers' difficulty acknowledging their anger feelings openly because of the guilt and shame often associated with them (Gallagher-Thompson & DeVries, 1994; Novaco, 1985). Moreover, caregivers might believe that anger is an unacceptable negative emotion for them to experience as caregivers (Schmidt & Keyes, 1985). Additionally, as pointed out by Steffen (2000), researchers might neglect anger because of the lack of diagnostic clarity on anger disorders, and the difficulties to differentiate between anger as an emotional state, hostility and aggression.

According to Spielberger, Jacobs, Russell, and Crane (1983) anger usually refers to an emotional state that consists of feelings ranging from slight annoyance to intense fury or rage (Miguel-Tobal, Casado, Cano-Vindel, &

Spielberger, 2001). Thus, anger refers to feelings that are necessary but not sufficient for hostility or aggressive behaviors. Moreover, these authors point that most of anger measures and studies tend to confuse anger feelings and anger expression and they claim that both need to be taken into account when considering anger effects. Even more, Funkenstein, King, and Drolette (1954) make a difference between anger expression-in (AX-I), which tend to suppress anger expression or to direct it to themselves, and anger expression-out (AX-O), which direct the anger toward others and is frequently expressed in verbally or physically aggressive behaviors (Averill, 1982; Tavris, 1982).

High levels of hostility in caregivers of persons with Alzheimer's were first reported by Anthony-Bergstone et al. (1988). Similarly, Barusch (1988) observed high rates of anger, arguments and resentment in spousal caregivers; while Gallagher et al. (1989) found that about 67% of dementia caregivers reported feelings of anger and 40% also indicated difficulties with the expression of angry feelings. Croog, Burlinson, Sudilovsky, and Baume (2006) claimed that 41.2% of spouse caregivers reported what they called 'anger-resentment' toward the patient, while Gallagher-Thompson and DeVries (1994) indicate that among caregivers the problem tends to be more one of suppression of anger rather than inappropriate expression (i.e. expression-in rather than expression-out). In a different sociocultural context, López (2007) found severe

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or moderate levels of trait anger in about 30% of Spanish caregivers of frail elderly.

High anger among caregivers is often associated with several negative emotions such as depression, burden or fear of losing control (Croog et al., 2006; Novaco, 1985; Vitaliano, Becker, Russo, Magana-Amato, & Mairuo, 1989). In addition, anger might be a risk factor for different health problems and it has been associated with increased blood pressure, glucose and insulin levels, and heart rate reactivity (Vitaliano, Zhang, & Scalan, 2003). Experiencing anger could be so dysfunctional that some authors consider it as a clinical problem itself (Deffenbacher, Oetting, & DiGiuseppe, 2002). Alternatively, anger expressions might also have important consequences on the care recipient. Bookwala and Schulz (1996) suggested that anger experienced by caregivers might lead to anger and increased agitation in dementia patients. Moreover, although physical violence is not a usual response for most caregivers, anger has proved to mediate the relationship between anxiety and depression, and potentially harmful behaviors (MacNeil et al., 2010). Actually, the internal expression of anger is considered an important risk factor for abuse toward the elderly patient (Pérez-Rojo, Izal, & Montorio, 2005); even more, some authors consider anger as a causal determinant of aggression (Novaco, 1994).

In this line, research that specifically focuses on anger predictors shows that it depends on objective stressors as well as on internal aspects of caregiver. Croog et al. (2006) found that burden was strongly associated with spouse caregivers' anger-resentment toward the patient with Alzheimer, caregiver concerns about personal time restriction and limitation of social life. Other factors that might contribute to anger or hostility are those related to disruptive behavior and aggressiveness in the care recipients, role conflicts between care and other responsibilities, the type of relationship between caregivers and care recipients (spouses tend to show more anger and violence expressions), the use of emotion-focused coping strategies to handle caregiving stressors, social isolation or a shared living situation (Barling, MacEwen, Kelloway, & Higginbottom, 1994; López, 2007; MacNeil et al., 2010; Pillemer & Suito, 1992). Semple (1992) suggested that an increased risk of anger is associated with conflicts involving family members' attitudes and behaviors toward the patient, rather than toward caregivers. In addition, Coon, Thompson, Steffen, Sorocco, and Gallagher-Thompson (2003) showed that self-efficacy for controlling thoughts partially mediated the intervention impact on state anger. Nonetheless, these studies use different terms to referring anger and in most cases make no difference between anger feelings and anger expression.

This study aims to obtain new data about the presence of anger feelings and anger expression (both in and out) in caregivers of frail elderly relatives and to characterize individuals with high anger and high anger-expression levels, who would be at the highest risk of negative consequences for health and potentially harmful behaviors. Moreover, it analyzes caregiving factors associated with

anger feelings and anger expression. Our theoretical framework will be the stress process model of caregiving developed by Pearlin, Mullan, Semple, and Skaff (1990). From this perspective, primary stressors, such as the cognitive and behavioral problems associated with dementia, create the conditions under which emotional distress might occur but the extent to which caregivers experience distress depends on their appraisal style and their resources to manage stressors. In other words, the type of stressors might matter less than how caregivers react to them and the resources they have to modulate their impact. Factors here considered stem from Pearlin et al.'s (1990) model and from the previous findings about anger in caregivers. Based on data from previous studies, we propose the following hypothesis: (1) most caregivers will show mild-moderate levels of trait anger and anger expression; (2) caregivers will show expression-in rather than expression-out of anger; and (3) individuals in the high anger and high expression range will be spousal caregivers, that care for a patient with disruptive behaviors, experience high levels of burden, role strains and a bad relationship with the care recipient, tend to use emotion-focused coping, and show low self-efficacy as caregiver, particularly for controlling disturbing thoughts. Since there are no previous studies that differentiate predictors of anger feelings versus anger expression in caregivers, there are no specific hypotheses about the differential predictors for these two issues, nor for anger expression 'in' versus 'out'.

## Methods

### Participants

The sample included caregivers recruited from different family associations and gerontology services in Spain. To be eligible for this study, caregivers had to meet the following criteria: to be aged 18 or above, to care for a dependent person aged 60 or above who had a score equal to or exceeding 1 on the Katz Index of Activities of Daily Living (ADL) (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963), to live in the same residence as the care recipient, and to be the sole or main person responsible for the person's care for at least six months.

Caregivers were individually assessed. Their participation in the study was voluntary and was always carried out after the caregiver was informed of the goals of the study, guaranteed the confidentiality of the information provided and obtained their signed consent. Initially, 129 caregivers were recruited. Since 18 did not complete assessment, the final sample consisted of 111 caregivers (response rate 86.05%).

### Variables and measures

#### Caregiver anger

The State-Trait Anger Expression Inventory (STAXI-2) (Spielberger, 1999; Spanish adaptation by Miguel-Tobal et al., 2001) was used to assess how often participants 'generally' (trait) feel mad, furious, etc., the AX-O

and the AX-I. These two measures, as well as control scores, were used to compute the Anger Expression Index (AX-Index), which assesses overall anger expression. Higher scores on the scales indicate greater anger and greater expression of anger. This instrument has been used extensively in anger studies, demonstrating good psychometric properties, and it has been used successfully to identify anger and hostility among elderly caregivers (Vitaliano, Young, Russo, Romano, & Magana-Amato, 1993). Its Spanish version has shown a test–retest correlation of 0.71 for trait scale and a good internal consistency (Cronbach's alpha 0.82 for anger trait, 0.69 and 0.67 for AX-I and AX-O, and 0.64 for AX-Index). In the present study internal consistency values were as follows: trait anger 0.88, AX-O 0.67, AX-I 0.54 and AX-Index 0.82.

### *Predictor variables*

Sociodemographic information and history of caregiving were obtained through a structured personal interview designed ad hoc to assess important variables regarding the caregiver (e.g. gender, age), the patient (e.g. diagnosis) and their care context characteristics (e.g. duration or care resources). This interview included the Katz Index of ADL (Katz et al., 1963; Spanish adaptation by Cruz, 1991) that measures the patient's disability in self-care activities. Higher scores on the scale indicate greater functional impairment. The internal consistency of its Spanish version is satisfactory (alpha = 0.91) (Izal, Montorio, Márquez, & Losada, 2005). Cronbach's alpha for our sample was 0.75.

The care recipient cognitive impairment was measured by the Global Deterioration Scale (GDS) (Reisberg, Ferris, de Leon, & Crook, 1982; Spanish adaptation by Cacabelos, 1990). It shows high inter-rater reliability (between 0.82 and 0.92) and it correlates with other instruments, as Mini-Mental State Examination (MMSE) (Cacabelos, 1990).

The care recipient problems were evaluated by the Revised Memory and Behavior Problems Checklist (RMBPC) (Teri et al., 1992; ad hoc Spanish adaptation) that focuses both on their frequency and on the caregiver's reaction to them. Higher scores in both scales indicate greater frequency of these problems and greater caregivers' reaction. The RMBPC has adequate psychometric properties, with alphas of 0.84 for frequency, and 0.90 for reaction scale. Cronbach's alphas in this sample were 0.93 and 0.95, respectively.

Caregivers' burden was assessed with the Caregiver Burden Interview (CBI) (Zarit, Reever, & Bach-Peterson, 1980; Spanish adaptation by Martín et al., 1996). Higher scores indicate greater subjective burden. The Spanish version has shown good test–retest reliability (0.86), and Cronbach's alpha (0.91). Cronbach's alpha for our sample was also 0.91.

Social support was measured by Social Support Questionnaire: Short form Revised (SSQSR) (Saranson, Saranson, Shearin, & Pierce, 1987; Spanish adaptation by Saranson, 1999), which provides scores for the number of people supplying support and the satisfaction derived

from this support (higher scores meaning greater satisfaction). It shows an appropriate internal consistency and inter-rater reliability (between 0.83 and 0.90) (Saranson et al., 1987). Cronbach's alpha in our sample was 0.85.

Self-esteem was assessed by Rosenberg Self-Esteem Scale (Rosenberg, 1965; Spanish adaptation by Echeburúa & Corral, 1998). Higher scores indicate greater self-esteem. It shows an adequate internal consistency and a good test–retest reliability, with alphas between 0.81 and 0.83 in its Spanish version. Cronbach's alpha here was 0.85.

Revised Scale for Caregiving Self-Efficacy (Steffen, McGibbin, Zeiss, Gallagher-Thompson, & Bandura, 2002; ad hoc Spanish adaptation) provided measures of caregivers' efficiency to obtain respite, responding to disruptive patient behaviors and controlling upsetting thoughts. It has an adequate internal consistency and inter-rater reliability between 0.70 and 0.76. Cronbach's alpha for our sample ranged from 0.87 to 0.93.

Finally, the Brief COPE Inventory (Carver, 1997; Spanish adaptation by Crespo & Cruzado, 1997) scored the frequency of the use of problem-focused and emotion-focused coping to handle caregiving-related problems. The Spanish adaptation of its original version shows good psychometric properties, with alphas between 0.53 and 0.92 for its different subscales. Cronbach's alphas here were 0.84 for problem-focused coping and 0.83 for emotion-focused coping.

For those instruments that required Spanish translations (i.e. RMBPC and Revised Scale for Caregiving Self-Efficacy), one of the authors of the study (M. Crespo) translated and adapted the scale and the instructions for its administration. This version was later revised and edited by two other members of the research group. The final draft was finally proofread by Spanish-speaking people with no knowledge of the English version to ascertain that the meaning in Spanish of several items was close enough to the original version.

The caregivers were individually interviewed through a structured protocol that included the sociodemographic information and history of caregiving, GDS, SSQRS and the Revised Scale for Caregiving Self-Efficacy. Interviews lasted for about 60 minutes and were carried out by trained psychologists. Afterwards, caregivers self-administered the remaining instruments under the psychologists' supervision. Approval for the study was obtained from the center's Research Ethics Board.

### *Data analysis*

Descriptive statistics (means, standard deviations and percentages) were used to characterize the sample and the different anger scores. Correlations between anger scores and between the predictor and dependent variables (i.e. trait anger, AX-O, AX-I and AX-Index) were calculated using Pearson's correlation coefficient for the quantitative variables, and point-biserial correlation coefficients for the dichotomous variables. Qualitative variables with more than two possible values were dichotomized.

Variables with significant correlations were then introduced in staged stepwise multiple linear regression analyses (one for each anger score), considering two blocks following the stress process model: first, sociodemographic and stress-related variables; and second, appraisal and resource variables. To avoid multicollinearity problems, variables with inter-correlations higher than 0.80 were excluded from the analysis. Moreover, mean and standard deviations of residual were examined to ensure accuracy of the model (expected value 0). Furthermore, Durbin and Watson (1951) test was applied to examine the independence of the residuals (value 2 for completely independent).

## Results

### Sample characteristics

Most of the caregivers in the sample were women (73.9%), the older relative's children (50.5%) or spouse (41.4%), and did not work out of the home (68.5%) (i.e. they were housewives, retired or unemployed), and their age ranged between 35 and 90 years ( $M = 62.02$ ;  $SD = 11.76$ ). Women also predominated among care recipients (72.1%). The receivers of informal help had a mean age of 80.96 years ( $SD = 9.78$ ), with a range between 60 and 102. Most of them presented a diagnosis of dementia (86.5%), mainly Alzheimer's type (84.4%).

Caregivers dedicated an average of 110.27 hours per week ( $SD = 46.72$ ), that is, about 16 hours per day, and they have played this role for an average of 55.15 months ( $SD = 44.47$ ) (about 4.5 years). They provided assistance for an average 3.44 ( $SD = 1.80$ ) ADL. Most of them received some support in caregiving from their relatives (68.2%) and used some kind of formal service (94.4%).

### Caregivers' anger and anger expression

Anger and anger expression results are shown in Table 1. As reported in Spanish validation of the STAXI-2, descriptive statistics are presented separately for men and women. Moreover, normative data considered here are those for women and men aged 30 and over (the highest age category referred to) in the Spanish STAXI-2 manual (Miguel-Tobal et al., 2001). As can be seen, according to the percentile of the reference sample scores, caregivers' mean scores showed mild levels of trait anger and anger expression (AX-O, AX-I and AX-Index) for both men and women.

Based on these standards for Spanish general population, percentage of caregivers with severe (fourth quartile scores in normative data) and moderate to severe (third and fourth quartiles) anger and anger expression (AX-O, AX-I and AX-Index) were computed, taking into account differences in the cut-off point by gender. Moreover, based on the number of individuals above the fourth quartile point for each scale, percentage of caregivers with high trait anger and high AX-O was 8.1%; for high trait anger with high AX-I, 4.5%; and for high trait anger and high AX-Index, 11.7%.

Correlations among anger scores showed significant direct correlations for trait anger and two expression scores ( $r = 0.663$ ,  $p < 0.001$  for AX-O;  $r = 0.645$ ,  $p < 0.001$  for AX-Index) but not for trait anger and AX-I ( $r = 0.183$ ,  $p = 0.054$ ); and significant direct correlations of AX-Index with AX-O ( $r = 0.647$ ,  $p < 0.001$ ) and AX-I ( $r = 0.293$ ,  $p = 0.002$ ). Nevertheless, AX-O and AX-I were not significantly inter-correlated ( $r = 0.149$ ,  $p = 0.118$ ).

### Factors associated with caregivers' anger and anger expression

For each set of anger scores (i.e. trait anger, AX-O, AX-I and AX-Index), its correlations with caregiver and care recipients variables, and stressors (sociodemographic characteristics and functional status), and appraisal and personal resource features were calculated (Table 2). Hence, all significantly correlated variables went into the correspondent regression analysis. Nevertheless, due to high inter-correlation ( $r = 0.825$ ) with reaction to the care recipient's memory and behavioral problems, the variable frequency of care recipient memory and behavioral problems was excluded from the analysis when both were significantly correlated with the dependent variable, for being the most distant one in Pearlin et al.'s (1990) framework model. No other variables were excluded for high inter-correlation. Moreover, for self-efficacy measures, when scales and total score were significantly correlated, only scale scores were introduced in the analysis since they offer more specific information.

Regression analysis performed on variables significantly correlated with *trait anger*, showed good residual values ( $M = 0.00$ ;  $SD = 1.00$ ), and Durbin-Watson test value (1.723) was near to 2. Higher caregivers' trait anger was significantly predicted by an unloving relationship with the care recipients both before and after becoming their caregivers, the use of emotion-focused coping, a

Table 1. Range, descriptive statistics and percentiles of anger and anger expression scores ( $n = 111$ ).

Variable (Score range)	Median	Female ( $n = 82$ )		Male ( $n = 29$ )		4th Q (%)	3rd and 4th Qs (%)
		Mean (SD)	Percentile <sup>1</sup>	Mean (SD)	Percentile <sup>1</sup>		
Trait anger (11–38)	18	19.05 (5.67)	50	19.29 (6.01)	45	22.5	39.6
AX-O (6–21)	10	10.16 (2.86)	40	9.83 (2.62)	40	8.9	38.7
AX-I (6–20)	12	11.78 (2.86)	45	11.72 (3.15)	35	18.9	46.8
AX-Index (5–50)	27	27.54 (9.29)	40	25.86 (10.48)	40	17.1	41.4

<sup>1</sup>Percentile in Spanish community normative data for men and women aged 30 and over (Miguel-Tobal et al., 2001).

Table 2. Correlations between anger scores and caregiver and care recipient features, stressors and caregiver's appraisal and resources ( $n = 111$ ).

	Trait anger	AX-O	AX-I	AX-Index
Sociodemographics and stressors				
Caregiver age	-0.063	-0.134	-0.036	-0.082
Caregiver gender (0 = male; 1 = female)	-0.019	0.052	0.009	0.077
Marital status (0 = partner; 1 = no partner)	-0.037	0.048	-0.051	-0.013
Job status (0 = active; 1 = inactive)	0.102	-0.045	0.139	0.048
Kinship with care recipient (0 = spouse; 1 = children)	-0.099	0.019	-0.049	-0.029
Previous relationship (0 = intimacy and love; 1 = unloving)	0.181	0.218*	-0.047	0.133
Change in relationship (0 = better or equal; 1 = worse)	0.201*	0.164	-0.017	0.197*
Care recipient age	-0.107	-0.003	0.019	-0.035
Care recipient gender (0 = male; 1 = female)	0.040	0.052	-0.140	-0.021
Diagnosis (0 = dementia; 1 = other)	-0.137	-0.020	-0.131	-0.189*
Caregiving weekly hours	0.088	-0.087	0.139	0.013
Care recipient cognitive impairment (GDS)	0.075	0.076	0.166	0.163
Care recipient dependence (Katz)	-0.044	-0.004	0.173	-0.064
Frequency of behavior problems (RMBPC)	0.286**	0.273**	0.180	0.268**
Appraisal and personal resources				
Burden (CBI)	0.403**	0.332**	0.288**	0.292**
Reaction to behavior problems (RMBPC)	0.339**	0.286**	0.171	0.336**
Perceived social support (SSQSR)	-0.052	-0.099	-0.107	-0.154
Satisfaction with social support (SSQSR)	-0.151	-0.215*	-0.168	-0.303**
Self-esteem (Rosenberg)	-0.297**	-0.134	-0.250*	-0.397**
Self-efficacy (Steffen scale)	-0.448**	-0.252*	-0.050	-0.385**
Obtaining respite	-0.125	0.024	-0.095	-0.073
Responding to disruptive behaviors	-0.367**	-0.259*	0.005	-0.440**
Controlling upsetting thoughts	-0.408**	-0.226*	-0.026	-0.322**
Problem-focused coping (Brief-COPE)	0.145	0.052	0.126	0.020
Emotion-focused coping (Brief-COPE)	0.522**	0.450**	0.281**	0.432**

\* $p < 0.05$ ; \*\* $p < 0.01$ .

greater reaction to the care recipient's memory and behavioral problems, and a lower self-efficacy to respond to disruptive patient's behaviors (Table 3). This model accounted for 37.6% of the variance with good generalizability ( $R^2$ -adjusted  $R^2$  difference = 0.03).

Similarly, the regression analysis for AX-O scores also offered good residual indexes ( $M = 0.00$ ;  $SD = 1.00$ ) and Durbin-Watson test value (1.839). Results showed that higher caregivers' external expression of anger was significantly predicted by an unloving previous relationship with the care recipients, the use of emotion-focused coping, and a greater reaction to the care recipient's memory and behavioral problems (see Table 3). Nevertheless, this model accounts for a modest 27.2% of the variance, though its generalizability is good ( $R^2$ -adjusted  $R^2$  difference = 0.021).

Alternatively, regression analysis for AX-I scores showed a unique significant predictor, that is, caregiver's burden, which accounts for 8.1% of the variance. Nevertheless, it showed good generalizability ( $R^2$ -adjusted  $R^2$  difference = 0.009), as well as residual indexes ( $M = 0.00$ ;  $SD = 1.00$ ), while Durbin-Watson test value was slightly over 2 (2.229).

Finally, the AX-Index analysis offered good residual values ( $M = 0.00$ ;  $SD = 1.00$ ) and Durbin-Watson test value (2.033). Results showed that higher anger expression was significantly predicted by a worse relationship with the care recipient after becoming caregiver, the diagnosis of dementia, the use of emotion-focused coping, a lower self-efficacy to respond to disruptive patient's behaviors, and a lower self-esteem (Table 3). The model

accounted for 32.6% of the variance, with good generalizability ( $R^2$ -adjusted  $R^2$  difference = 0.032).

## Discussion

First, according to expectations, data show that caregivers of elderly relatives present mild anger levels, considering both trait anger and expression indexes. Nevertheless, around 40% of the caregivers reach moderate-severe trait anger levels, and about 41% show moderate-severe levels of anger expressions (AX-Index). This could have further effects on the caregivers' health and emotional state (Croog et al., 2006; Vitaliano et al., 1989, 2003), on the care quality and on the development of resentment or potentially harmful behavior toward the care recipient, particularly when high anger feelings coexist with high levels of anger expression (up to 12% of the caregivers), and with anxiety, which is such a frequent problem in caregivers (MacNeil et al., 2010). These percentages are close to the values found for anger-resentment toward the patient (Croog et al., 2006), and for anger feeling among caregivers (Gallagher et al., 1989). On the other hand, results were slightly above 30% of the moderate-severe trait anger found by López (2007) in a Spanish sample with the same instrument (i.e. STAXI-2).

The analysis of the expression scores show that, as predicted, caregivers tend to control their anger expressions; since caregivers sometimes experience anger as an unacceptable emotion, they tend to focus on developing strategies to suppress it (Gallagher-Thompson & DeVries,

Table 3. Stepwise multiple linear regression analysis for anger scores ( $n = 111$ ).

	$\beta$	$\Delta R^2$	$F$	$p$
Trait anger				
Block 1				
Change in relationship (0 = better or equal; 1 = worse)	-0.041	0.040	4.544	0.035
Previous relationship (0 = intimacy and love; 1 = unloving)	-0.162	0.042	4.830	0.010
Block 2				
Emotion-focused coping	0.411	0.222	15.566	<0.001
Reaction to behavior problems	0.189	0.040	13.892	<0.001
Self-efficacy responding to disruptive behaviors	-0.187	0.032	12.662	<0.001
Adjusted $R^2 = 0.346$				
AX-O				
Block 1				
Previous relationship (0 = intimacy and love; 1 = unloving)	-0.202	0.048	5.452	0.021
Block 2				
Emotion-focused coping	0.392	0.194	17.215	<0.001
Reaction to behavior problems	0.180	0.030	13.303	<0.001
Adjusted $R^2 = 0.251$				
AX-I				
Block 2				
Burden	0.284	0.081	9.597	0.002
Adjusted $R^2 = 0.072$				
AX-Index				
Block 1				
Change in relationship (0 = better or equal; 1 = worse)	-0.070	0.038	4.354	0.039
Diagnosis (0 = dementia; 1 = other)	-0.092	0.035	4.298	0.016
Block 2				
Emotion-focused coping	0.270	0.140	9.702	<0.001
Self-efficacy responding to disruptive behaviors	-0.237	0.068	10.378	<0.001
Self-esteem	-0.232	0.045	10.156	<0.001
Adjusted $R^2 = 0.294$				

1994). In fact, participants had higher scores in AX-I than in AX-O, which probably shows the caregivers' difficulties to display their negative feelings.

Contrary to expectations, spousal caregivers did not show higher anger or higher anger expression than child caregivers. Nevertheless, caregivers here always lived in the same residence as the care recipient, as required in the inclusion criteria, which is not always so when child caregivers are considered. Since sharing living conditions has also shown a significant effect in previous research, being associated with violent feelings (Pillemer & Suito, 1992), data from kinship and cohabitation effects could be overlapping, and would require further scrutiny.

Similarly, results showed no significant effects of role conflicts on anger feeling and anger expression. These data are somehow at odds with the hypothesis that multiple role commitments produce a strong tendency toward role strain (Goode, 1960), and with previous results (Barling et al., 1994). However, it is worth noting that data here focus only on job-caregiving conflict, not on other role strains (e.g. children care). Although there is evidence that working caregivers seem to experience more negative effects than non-working caregivers (Gordon, Pruchno, Wilson-Genderson, Marcinkus, & Rose, 2012; Wang, Shyu, Chen, & Yang, 2011), research also indicates that caregivers' employment might mitigate stress and strain (Edwards, Zarit, Stephens, & Townsend, 2002). Thus, the

effect of role conflict (i.e. job, children care, etc.) on anger will deserve further research.

On the other hand, some authors claim that resentful feelings can lead to interpersonal conflicts and thus deteriorate the bond between caregivers and care recipients (Schofield, Murphy, Herrman, Bloch, & Singh, 1997). Present data corroborate this effect since a bad relationship with the care recipient is significantly associated with caregiver's anger feelings and anger expression. However, conclusions about the role of relationship quality before and after becoming caregivers must be taken cautiously as these were assessed simultaneously and after occupation of the caregiver role.

Another caregiving stressor of particular interest might be the presence of certain behaviors. Actually, caregivers are distressed when their care recipients behave in ways that make providing care more onerous (Hooker, Monahan, Bowman, Frazier, & Shifren, 1998). Research in this area has focused primarily on the problematic types of behavior exhibited by Alzheimer's patients (e.g. wandering, repetitive questioning, inappropriate social actions), and findings reveal that caregivers are more bothered by these kinds of behavior than they are by the amount of care they must provide (Pinqart & Sørensen, 2004). In this line, results from the current study show that these behaviors are significantly related with anger feelings and AX-O. This is also in accordance with data

proving the contribution of disruptive behavior and aggressiveness to caregivers' anger or hostility (Croog et al., 2006; Pillemer & Suito, 1992). Moreover, findings support a strong correlation between frequency of behavior problems in care recipients and caregivers' reaction to them. Furthermore, trait anger and anger expression (i.e. AX-Index) are inversely associated with caregivers' efficacy to handle these disruptive behaviors, which supports the mediating role of caregivers' self-efficacy in anger (Coon et al., 2003). However, these authors found that self-efficacy, specifically self-efficacy for controlling upsetting thoughts, was a mediator of intervention effects on anger expression style (i.e. AX-O), while here the significant effect corresponds to self-efficacy for managing difficult patient behavior. In addition, some authors have recently claimed that caregivers with higher self-efficacy in controlling upsetting thoughts had more positive gains and less burden and depression symptoms (e.g. Cheng, Lam, Kwok, Ng, & Fung, 2013). The interaction among these variables and their effects on anger and anger expression should be established in future studies, as well as the differential effect of the different aspects of caregivers' self-efficacy.

Nonetheless, the variable with the most robust association with anger is emotion-focused coping. Actually, emotion-focused coping is the variable accounting for most of the variance for trait anger (22%), for AX-O (19%) and for AX-Index (14%), as found in other studies: López (2007) reported that two emotion-focused strategies (behavioral disengagement and venting) accounted for about 35% of the variance of trait anger. Moreover, several authors have shown the association between emotion-focused coping and psychological distress in caregivers (Crespo, López, & Zarit, 2005; García-Alberca et al., 2012), and consequent interventions that aim to modify the use of coping strategies have been proposed (e.g. López, Crespo, & Zarit, 2007).

Among the caregivers' personal resources, there is also a significant effect of self-esteem on anger expression. Although there is no previous reference about the effect of this variable on caregivers' anger, Novaco (1975) claimed that self-esteem would help to avoid anger responses. Moreover, regarding caregivers, there is evidence of the protective effect of high self-esteem for anxiety and depression problems (Crespo et al., 2005). Present data suggest that self-esteem should be taken into account when analyzing mediating factors of anger expression.

We found evidence to support our hypothesis that burden is associated with anger in caregivers only for AX-I. In fact, subjective burden is the only significant predictor of AX-I. Nonetheless, it accounts only for a modest 8% of the explained variance. Furthermore, results about AX-I, the most usual form of anger expression in caregivers, point that it is not significantly related to other forms of anger expression (expression-out), and that it is associated with a different set of variables. Consequently, it should be analyzed separately when analyzing anger in caregivers.

All in all, and taking as reference the caregiver stress model by Pearlin et al. (1990), the present result would show that caregivers' anger feelings and anger expressions

arise as result of several conditions, such as caregiving stressors (i.e. care recipients' disruptive behaviors and the quality of the relationship) and their appraisal (i.e. reaction to care recipients' problems), being mediated by some caregivers' personal resources such as self-efficacy responding to disruptive behaviors, self-esteem, and mainly the way they cope with caregiving strains.

Nevertheless, results show the need to include more variables in future analysis, as there is still a large proportion of the variance that remains unaccounted for, particularly for AX-I. Actually, results concerning this score must be taken with caution due to the low internal consistency value of this scale. Moreover, our sample included a wide focus of informal caregivers of older persons with physical, mental and/or cognitive problems, showing similar features to the ones reported by the reference study in Spain (i.e. IMSERSO, 2005). Even so, being a convenience sample, the extent to which our findings are generalizable to caregivers of older persons in other locations might be limited. On the other hand, the current study is cross-sectional; thus, it does not allow causal links among the variables. Longitudinal data that examine how the relations change over time would be enlightening.

To sum up, this study first reports differentiated data about anger feeling and anger expression, even more, about AX-O versus AX-I. Moreover, it provides information about factors associated with each anger aspect. The results highlight several practical implications toward reaching a better understanding and prevention of anger in caregivers of dependent elderly relatives. First, while traditional lines of caregiving research tend to focus on objective stressors and demands, regression analyses results emphasize the role of personal aspects of caregiver in anger; these data facilitate the understanding of the specific role that a number of factors play in different types of anger expression. Since emotion-focused coping might likely increase anger and its external expression, programs aiming to develop effective coping strategies must be incorporated into interventions for caregivers. Finally, poor self-efficacy when responding to a patient's disruptive behaviors highlights the convenience of implementing specific training programs to teach caregivers how to tackle the memory and behavior problems (e.g. repetitions, oblivions, interruptions and complaints) that usually appear in their care recipients, especially in those suffering from dementia. Elucidating these factors will mean an advance in the development of psychological programs to decrease levels of anger in caregivers, to promote the correct management and expression of these feelings, and hence improve their emotional state. Furthermore, since there is evidence of inter-relationship between caregivers' attitudes and care recipients' state, these programs would eventually have a positive effect on patients' emotional and functional state.

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