Dual caregiving by grandmothers with older relatives: Personal factors influencing health and stress

Sara Luna, Francisco Rivera and Pilar Ramos

Abstract

Grandmothers in the "sandwich generation" are considered as those women who are potential caregivers for two generations: older relatives and grandchildren. With the goal of understanding the factors that affect their stress and health, 149 women from southwestern Spain were interviewed using an ad hoc questionnaire that included standardized scales and subscales. The results showed that age, coping strategies based on emotional support and acceptance, as well as optimism and social support improved the health of these women by reducing their perceived stress. Although caring for older relatives is related to family conflicts and worse health, conversely, caring for grandchildren is related to slightly better health. The results are useful for planning psychological interventions with these women and highlight the need to include family interventions.

Keywords

coping, denial, family care, older relatives, optimism, protective factors, stress, women's health

Caring for a family member has often been conceptualized as a chronic stressor for care providers (Boogaard et al., 2019; Vitaliano et al., 2004), demonstrating negative consequences on their physical and psychological health, especially for women, who more frequently provide the care (Ma et al., 2018; Pavalko, 2011). Until now, the majority of research about the effects of caregiving on the care provider has focused on caring for older relatives—habitually the father or mother (Kenny et al., 2014)—or caring for the spouse or partner (Chappell et al., 2015; Pinquart and Sörensen, 2011). However, research on intergenerational caregiving points out that the majority of domestic care and help is for descendants: fathers and mothers caring for children and grandchildren (Dukhovnov and Zagheni, 2015; Fingerman et al., 2016).

In this sense, the women of the "sandwich generation"—those that are between the demands of caring for their direct ascendant family members (characterized by high levels of dependence) and helping their adult children (especially in caring for grandchildren)—constitute a particular group of care providers (Abramson, 2015; Do et al., 2014; Železná, 2018). According to Železná (2018), women who already care for an older relative are more likely to take care of their grandchildren. This trend highlights the importance of providing adequate attention to this group of

University of Seville, Spain

Corresponding author:

Pilar Ramos, Department of Developmental and Educational Psychology, Faculty of Psychology, University of Seville, C/ Camilo José Cela s/n, 41018 Sevilla, Spain.
Email: pilarramos@us.es

women. Curiously, in this ever more prevalent group (Huvent-Grelle et al., 2015; Pavalko, 2011; Xu, 2018), rather than being a double burden and increasing stress, caring for grandchildren can otherwise have a protective effect on the psychological adjustment (Luna et al., 2016a; Xu, 2018), as well as improve health and increase the life-satisfaction of these care providers (Di-Gessa et al., 2015). Nevertheless, there are few studies to date that focus their attention on this group of women caregivers.

According to the model of Alzheimer's caregivers' stress proposed by Pearlin et al. (1990)—an adaption of the Stress Process Model (Pearlin, 1989) in the caregiving context—stressors inherent to the caregiver situation, secondary stressors, background, contextual, and mediating factors all converge in the caregiver situation. On one hand, caregiving and its consequences are potentially influenced by background and contextual factors (such as the care provider's sociodemographic characteristics, the family composition, or the kinship with the care recipient). On the other hand, the model distinguishes primary stressors (characteristics intrinsically associated with the type of care required, such as the degree of dependence) from secondary stressors (those derived from the primary ones). Family conflicts regarding the type of care required or disagreements about the degree of implication of other family members are common secondary stressors. Finally, factors like coping or social support mediate between the stressful situation and the final perceived stress.

Although the stress process model has been developed considerably, the core components of this analysis—stressors, mediators/moderators, and mental health outcomes—continue to be the major conceptual underpinnings of the stress process perspective (Pearlin and Bierman, 2013). Particularly in the caregiving context, several research studies have explored "caregiver stress," assuming that prolonged provision of family care can be a highly stressful situation for the caregiver that could potentially impair their health (Kroenke et al., 2004; Musil et al., 2011). This model has been used not only to study stress process in caregivers of people with Alzheimer's disease or dementia (Fekete et al., 2019; Wong and Zelman, 2019), but has also been used for caregivers of older relatives (Pine and Steffen, 2019; Walsh and Murphy, 2019), for adults providing care for their spouses (Kim et al., 2017), for adult-child caregivers (Liu et al., 2019), grandparent caregivers (Whitley and Fuller-Thomson, 2016), or even for informal caregivers in general (Boogaard et al., 2019). Despite the elapsed time, this model is still used as a theoretical framework from which to establish the specific relevance of different stressors in the caregiving stress process.

According to Lazarus and Folkman (1984), coping can be defined as a complex cognitive and behavioral process through which a person tries to deal with the internal and external demands that—according to their own resources—have been evaluated as overwhelming. The use of avoidance coping strategies—especially those related to denial and self-blame—has been consistently associated with an increase in stress, as well as a higher presence of anxiety and depression in the care providers (Goldzweig et al., 2012; Luna et al., 2016b). Likewise, caregivers often use both problem-based and emotion-based approach strategies (Revenson et al., 2016). Whereas emotion-based strategies have traditionally shown to be less adaptive than problem-based strategies (Austenfeld and Stanton, 2004), more recent studies demonstrate the benefits of the first, especially the accepting reality and using emotional support (Alpert and Womble, 2015; Luna et al., 2016b).

On the other hand, more stable characteristics or psychological traits have recently shown to be a valuable resource in coping with the caregiving circumstances (Trapp et al., 2015), such as predisposition to optimism (Daukantaite, 2014; Deist and Greef, 2017; Trapp et al., 2015) and emotional intelligence. However, considering that caregiving occurs almost exclusively within the family, it is remarkable how little research focuses on emotional intelligence, especially given that emotional ties and handling emotions play such a relevant role (Lynch et al., 2007). In fact, the few studies that have

taken it into account identify emotional intelligence as a key resource for managing the emotionsassociatedwithcaregiving(Ruiz-Robledillo and Moya-Albiol, 2014; Weaving et al., 2014).

In the first place, this study aims to capture a current picture of grandmothers in the "sandwich generation" and their caregiving situation. What are their sociodemographic characteristics? What is their family context? Are they caring for their older relatives, their children, or both? What psychological resources do they have to deal with the caregiving situation? Do they have social support? Do they feel stressed and in poor health? Given the lack of research on grandmothers in the "sandwich generation" in Southern Spain, it is difficult to specify any hypothesis.

Furthermore, based on the aforementioned model by Pearlin et al. (1990), this study offers a structural equation model to help understand the relationship between these different factors in the specific case of grandmothers in the "sandwich generation." Other more up-to-date variables such as emotional intelligence and optimism (which were not considered in the original model) have been included. As a result, our research has the following hypotheses:

1. Grandmothers in the "sandwich generation" show a great variety of psychological resources and social support but, in general, they suffer high levels of stress and poor health.
2. Sociodemographic characteristics of grandmothers in the "sandwich generation" (working as background factors) influence their perceived stress and, consequently, their physical and psychological health. Specifically, older age, not having a partner, lower level of education, and economic difficulties are associated with higher stress and poorer health, both physical and especially psychological.
3. Regarding family context, on one hand caregiving for an older relative is related to higher stress and poorer health, especially when it is exclusive (not combined with caregiving for grandchildren), whereas caregiving for a grandchild may have the opposite effect, resulting in lower stress and better health, especially when it is exclusive (not combined with caregiving for older relatives). On the other hand, family conflicts are related to higher stress and poorer health.
4. Regarding psychosocial resources, the use of denial and self-blame coping strategies are related to higher stress and poorer health, whereas social support and the use of acceptance and emotional support coping strategies and high emotional intelligence are related to lower stress and better health.
5. Overall, as the stress process model (Pearlin et al., 1990) adapted to caregiving situations states, caregiving (primary stressor) for an older relative (family context), using denial and self-blame coping strategies (mediator factors), along with older age, lower educational level, and economic difficulties (background and contextual factors) increase these women's perceived stress and diminish their health. Nevertheless, high social support, high emotional intelligence, and using acceptance and emotional support coping strategies (moderator factors) buffer the effect of these stressors, decreasing these women's perceived stress and, in consequence, improving their health. In addition, caregiving for a grandchild may be associated with lower stress and better health. The details of these relationships and their mutual influence are shown in Figure 1.

Method

Study design and participants

A cross-sectional, descriptive study was conducted using data from structured interviews. Due to the specific nature of the studied population, the selection of subjects was realized using a non-probabilistic sample.

The sample includes 149 women residing in southwestern Spain who meet the following

Figure 1. Initial model of the influence of sociodemographic variables, family context, and psychological and social resources on stress and health.

inclusion criteria: be a grandmother and have a living direct ascendant (father, mother, father-in-law, and/or mother-in-law). Subjects were excluded from the sample if they had a diagnosed mental illness, chronic disability, did not sign the prior informed consent form, or did not adequately speak the language (Spanish). This sample size is larger than most complex models of caregivers' psychological health, which have been carried out with a minimum of 80 participants (Van der Lee et al., 2014).

Variables and instruments

A questionnaire designed specifically for this study—comprised mostly of instruments or scales validated by other research—was used for this work. The specific variables and the respective scales are described below.

Sociodemographic characteristics

Age. This variable refers to age of in years, of the person interviewed.

Partner. This variable took into account whether or not the women lived with a spouse or partner, regardless of their civil status.

Education level. This variable was dichotomized in low level when the women had no formal education or only primary education, and high level when they had a high-school education or higher.

Economic situation. This variable is an adaptation of the Indicator of Consumer Confidence survey (*Indicador de Confianza del Consumidor*) from the Center for Sociological Research (*Centro de Investigaciones Sociológicas*, 2014). It has four response options: it is difficult for you to make ends meet at the end of the month, resulting in acquiring debt; it is difficult for you to make ends meet at the end of the month, forcing you to dip into your savings; you barely make ends meet; you save a little money each month; and save sufficient money each month. In a later time, in order to simplify the analysis, these responses were dichotomized between those people that have difficulty making ends meet and those that do no (and can therefore save money).

Family context

Family care (grandchild/older relative/both generations). The women were asked if they had

cared for (helping in the basic tasks of daily life, accompanying or supervising) a family member in the past month, specifically grandchildren or older relatives, in an adaptation of the Caring for the Elderly in Spanish Homes survey (*Cuidados a las Personas Mayores en los Hogares Españoles*) from the Center for Sociological Research (*Centro de Investigaciones Sociológicas;* Instituto de Mayores y Servicios Sociales (IMSERSO), 2005). To divide between infrequent and frequent care, both for grandchildren and older relatives, the different sums of frequency of care were pondered in two scales from 0 to 14, with a score of 6 as the cutoff point (corresponding with continuously caring for a family member Monday through Friday, rotationally or distributed, to caring for up to five family members; Luna et al., 2016a).

Family conflicts. Part of an adaptation of the Caring for the Elderly in Spanish Homes survey (*Cuidados a las Personas Mayores en los Hogares Españoles*) from the Center for Sociological Research (*Centro de Investigaciones Sociológicas*; IMSERSO, 2005), in which they were asked to describe their relationship with direct family members (children, parents, and partner) choosing between four response options: very intimate; normal, according to the relationship that binds us; cold and distant; or with conflicts. The existence of family conflicts is determined when at least one of these relationships is classified as "with conflicts."

Psychological resources

Coping strategies. Coping strategies were assessed using the Brief Cope (Carver, 1997), a shorter version of the COPE inventory (Carver, 1997) adapted to the Spanish population by (Morán et al., 2010) known as COPE-28. It is a 4-point Likert-type questionnaire (from 0 (*never*) to 3 (*always*)) that evaluates the frequency with which the person employs 14 different coping strategies when faced with stressful situations. Specifically, the subscales Acceptance, Denial, Using Emotional Support, and Self-blame were used for this study, with two items for each of them. The score of each scale can range from 0 to 6 points. The Cronbach's alpha for the total scale was 0.72.

Emotional intelligence. This variable is assessed by adding the score obtained in the subscales Flexibility (8 items), Stress Tolerance (9 items), and Impulse Control (9 items) from the Emotional Quotient Inventory (EQ-i, Bar–On, 1997), adapted to Spanish by Castejón et al. (2008) The response options are on a 5-point Likert-type scale, from 1 (*almost never*) to 5 (*very frequently*). The total score can range from 26 to 130 points. The overall Cronbach's alpha was 0.74.

Optimism. Dispositional optimism is assessed by the optimism subscale of the Life Orientation Test (LOT-R; Scheier and Carver, 1985), adapted to the Spanish population by Otero et al. (1998) It contains 3 items that evaluate dispositional optimism through a 5-point Likert-type scale from 1 (*totally disagree*) to 5 (*totally agree*). The total score can range from 3 to 15 points. The higher the score, the greater the dispositional optimism is. The Cronbach's alpha in this subscale was 0.75.

Social support. Social support was measured using the Duke-Unc questionnaire (Broadhead et al., 1988), adapted to the Spanish population by Bellón et al. (1996). It is a 5-point Likert-type scale from 1 (*much less than I would like*) to 5 (*as much as I would like*). It evaluates the perception of social support based on 11 items. The total score can range from 11 to 55 points. In the Spanish population a score under 32 points is considered low. The Cronbach's alpha was 0.85.

Perceived stress. *Perceived Stress Scale* (PSS-4; Cohen and Williamson, 1988), adapted to the Spanish population by Remor and Carrobles (2001), is a 5-point Likert-type scale from 1 (*never*) to 5 (*very often*). The scale includes four items that report on the frequency within the past month with which a person has perceived difficulties as uncontrollable. The total score can range from 4 to 20 points and reports the

amount of stress perceived by a person. Therefore, a higher score corresponds to greater stress. The Cronbach's alpha was 0.72.

Health. Subscales of Physical Health and Psychological Health from the Quality of Life Scale, WHOQOL-BREF (World Health Organization Quality of Life (WHOQOL) Group, 1995), adapted to Spanish by Lucas-Carrasco (1998), were used to evaluate the overall quality of life. The subscale consists of six items on a 5-point Likert-type scale (from *none, very unsatisfied*, or *never* to *extremely, very satisfied*, or *always*). The scores are converted to a scale from 0 to 100. A higher score corresponds to better health. The Cronbach's alpha was 0.76 and 0.85, respectively.

Procedure

After developing the questionnaire and receiving approval from the Ethics Committee for Biomedical Research in Andalucía (*Comité de Ética de la Investigación Biomédica de Andalucía*) a pilot study was conducted. In this preliminary study, four women who met the sample characteristics were interviewed following the questionnaire structure in order to find additional indicators of time monitoring and questionnaire comprehension. Later, a panel of experts was organized to determine whether changes were needed to improve the quality of the study. As a result some scales were erased, thus reducing the application time.

For data collection, referential organizations were contacted (city councils, elderly homes, recreational centers, health centers, etc.). Through these organizations, potential participants (those who met the requirements for inclusion) were identified and the research was explained to them. Those that chose to participate were scheduled for an individual interview at their home at a later date. At this meeting, after written informed consent was obtained, the corresponding structured interview, following the questionnaire, was carried out. If participants showed any signs of fatigue the interview was abbreviated by eliminating the emotional intelligence scales, which is why the response rate for these scales was 0.77. For the remaining scales of the questionnaire, the response rate was near 1 (0.97 for coping strategies scales, 0.99 for optimism scale, 0.99 for social support questionnaire, and 1 for the PSS and health subscales). The interviews were approximately 1.5hours in duration. If it seemed that the interview would last longer than this, participants were offered the possibility of finishing the interview in a second session in order to avoid fatigue or interfering in their personal life. In these cases a new appointment was agreed upon.

Data analysis

To carry out the proposed objectives, Pearson's correlation tests were conducted for the bivariate analysis ($p < 0.05$), and η_2 was used to test the effect size, resulting in the following intervals: from 0 to 0.009, negligible; from 0.010 to 0.089, low effect size; from 0.090 to 0.249, medium effect size; and from 0.250, large effect size (Tabachnick and Fidell, 2007).

The multivariate analysis was done through a structural equation model, using the maximum likelihood method. Model adjustment was realized based on different indices of absolute adjustment (X^2 and X^2/gl), measures based on residuals (standardized root-mean-square residual (SRMR)), indices of comparative adjustment (Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Adjusted Goodness-of-Fit Index (AGFI)), and measures of errors of approximation (root mean square error of approximation (RMSEA) and SRMR). In the case of the absolute indices, the quotients X^2/gl are considered acceptable when they showed values lower than 5 and adequate when this ratio was less than 3. For the NNFI, CFI, AGFI, and IFI, figures above 0.90 are considered as indices of good adjustment (McDonald and Ho, 2002), although Hu and Bentler (1999) recommend values close to or above 0.95. For the RMSEA, the SRMR values close to or below 0.06 are accepted (Hu and Bentler, 1999).

Lagrange multiplier (LM test) and Wald test were used to analyze possible model improvements. Before calculating a new parameter or eliminating an already existing one, the following factors were taken into account: the criteria of the LM and Wald tests; the theoretical background supporting the change; and the improvement in the adjustment that could cause the said modification, analyzed using the improvement in the different adjustment indicators.

The results of the structural equation model are displayed in a path diagram, which includes the value of the standardized coefficients in each of the proposed relationships. These standardized coefficients measure the intensity (in absolute values, from 0 (*no relationship*) to 1 (*maximum possible relationship*), as well as the directionality of the relationship between variables based on the coefficient sign (a positive sign indicates a direct relationship whereas a negative sign indicates an inverse relationship).

Statistical analyses were conducted using IBM SPSS Statistics 24.0, descriptive statistics and correlational analyses employed the program EQS 6.2, and certain calculation complements provided by Microsoft Excel were used for the structural equation models.

Results

Sample distribution in sociodemographic characteristics, family context, physiological resources, social support, stress levels, physical health, and psychological health

The sample distribution in these variables is shown in Table 1. As can be observed, grandmothers in the "sandwich generation" were an average age of 57.91years old (standard deviation (*SD*): 5.85), most of them lived with their spouse or partner (79.9%), and slightly more than half had a low education level (55%) and some kind of economic difficulty (52.3%).

Regarding family context, as shown in this table, almost 60percent of these women assume frequent care of at least an older relative, and more than half (55%) of at least a grandchild. The simultaneous caregiving of both generations is present in 32percent of these women. On the other hand, more than 20percent of these women report family conflicts.

Regarding psychological resources and social support, these women exhibit a frequent use of acceptance (4.37), emotional support (3.68), and to a lesser extent self-blame (2.33). Denial is a less used coping strategy (1.18), whereas they tend to show high levels of emotional intelligence (94.03 of up to 118 points), optimism (11.25 of up to 15 points), and social support (44.05 of up to 55 points).

Finally, regarding perceived stress and physical and psychological health, these women show low to moderate level of stress (5.46 of up 15 points), good physical health (60.64), and slightly poor psychological health (48.48). These results, in connection with hypothesis 1, are relatively unexpected.

The relationship of sociodemographic characteristics, family context, physiological resources, and social support, to stress levels, physical health, and psychological health

In order to facilitate interpretation of the results, these relationships have been grouped into three sections of analysis: first, relationship between sociodemographic characteristics and stress level, physical health, and psychological health (related to hypothesis 2); second, the relationship between family context and stress levels, physical health, and psychological health (regarding hypothesis 3); and the relationship between psychological resources and social support and stress levels, physical health, and psychological health (regarding hypothesis 4).

Relationship between sociodemographic characteristics and stress level, physical health, and psychological health. As can be observed in Table 2, only the significant relationships are mentioned. First, age showed a negative correlation with perceived stress, meaning that as the age of the

Table 1. Sociodemographic characteristics, family context, psychological resources, social support, stress, and health of the sample.

	Mean	*SD*	Range (min–max)	*N*	%
Age	57.91	5.85	40–75	149	
Partner					
Yes				119	79.9
No				30	20.1
Education level					
Low				82	55
High				48	32.2
Economic situation					
With economic difficulties					52.3
Without economic difficulties					47.7
Care for grandchildren					
Frequent care				82	55
None or infrequent care				67	45
Care for older relatives					
Frequent care				88	59.1
None or infrequent care				61	40.9
Care for both generations					
Frequent care				47	32.2
None or infrequent care				99	67.8
Family conflicts					
Present				31	20.8
None				118	79.2
Coping strategies					
Acceptance	4.37	1.38	0–6	144	
Using emotional support	3.68	1.65	0–6	144	
Denial	1.18	1.31	0–6	144	
Self-blame	2.33	1.50	0–6	144	
Emotional intelligence	94.03	12.88	54–118	115	
Optimism	11.21	2.72	3–15	148	
Perceived social support	44.05	8.20	11–55	147	
Perceived stress	5.46	3.22	0–15	149	
Physical	60.64	15.83	0–100	149	
Psychological	48.48	16.58	0–100	149	

SD: standard deviation.

women increased, their perception of stress decreased, which was an unexpected result. Second, as expected, the education level is significantly associated with a lower perception of stress, better physical health, and better psychological health. Third, as also expected, the perception of economic conditions correlates inversely with perceived stress and directly with psychological health. Thus, these results partially confirm hypothesis 2.

Relationship between family context and stress levels, physical health and psychological health. The frequent care of family members (either grandchildren, older relatives, or both generations simultaneously) does not directly relate to

Table 2. Relationship between sociodemographic characteristics, family context, psychological resources and social support and stress, physical health, and psychological health.

	Stress			Physical health			Psychological health		
	R	(Bilateral sig.)	*N*	*r*	(Bilateral sig.)	*N*	*r*	(Bilateral sig.)	*N*
Age	−0.179*	0.029	149	−0.042	0.609	149	0.111	0.176	149
Partner	−0.100	0.227	149	0.058	0.480	149	0.35	0.676	149
Education level	−0.202*	0.021	130	0.215*	0.014	130	0.304**	0.000	130
Economic situation	−0.301**	0.000	149	0.147	0.073	149	0.176*	0.032	149
Care for grandchildren	−0.011	0.892	149	−0.003	0.967	149	0.045	0.587	149
Care for older relatives	0.027	0.750	149	−0.041	0.629	149	−0.081	0.330	149
Care for both generations	−0.017	0.838	149	−0.056	0.499	149	0.025	0.765	149
Family conflicts	0.178*	0.030	149	−0.174*	0.034	149	−0.120	0.143	149
Acceptance coping strategy	−0.395**	0.000	144	0.252**	0.002	144	0.350**	0.000	144
Using emotional support coping strategy	−0.240**	0.004	144	0.092	0.272	144	0.312**	0.000	144
Denial coping strategy	0.252**	0.002	144	−0.141	0.091	144	−0.213*	0.010	144
Self-blame coping strategy	0.148	0.076	144	0.76	0.364	144	−0.195*	0.019	144
Emotional intelligence	−0.235*	0.012	115	0.149	0.112	115	0.256**	0.006	115
Optimism	−0.280**	0.001	148	0.198*	0.016	148	0.367**	0.000	148
	−0.367**	0.000	147	0.165*	0.045	147	0.328**	0.000	147

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

any of the three indicators analyzed. This result was unexpected. Conversely, as anticipated, the existence of conflictive family relationships increases perceived stress and decreases physical health, thus partially confirming hypothesis 3.

To complete these results, an analysis of variance (ANOVA) was conducted between the four types of caregiving: caregiving for grandchildren, caregiving for older relatives, caregiving for both generations, or absence of frequent care.

As shown in Table 3, no significant differences have been found between the groups. Nevertheless, low effect size has been found between the groups in perceived stress and psychological health. In particular, these effect sizes have been found in perceived stress and psychological health. On one hand, the group of women who do not assume frequent care perceives slightly less stress than the women who assume family care, regardless of their kinship with the care recipient. On the other hand, the women who care for older relatives show

Table 3. Comparison of stress, physical health, and psychological health between caregiving groups.

Groups	*N*	Mean ± *SD*	*F*	*gl*	*p* value	Partial η^2
Grandchildren care	33	5.64 ± 3.08	0.525	3, 142	0.666	0.011
Older relative care	40	5.70 ± 3.39				
Both generations care	47	5.38 ± 3.21				
Absence care	26	4.77 ± 2.79				
Grandchildren care	33	61.04 ± 14.38	0.187	3, 142	0.905	0.004
Older relative care	40	61.07 ± 17.23				
Both generations care	47	59.35 ± 14.45				
Absence care	26	62.09 ± 19.03				
Grandchildren care	33	50.77 ± 14.61	0.623	3, 142	0.601	0.013
Older relative care	40	46.15 ± 17.33				
Both generations care	47	49.09 ± 17.76				
Absence care	26	50.66 ± 14.06				

	Effect size (Cohen's *d*)		
	Perceived stress	Physical health	Psychological health
Grandchildren care—older relative care	−0.02	0.00	0.29*
Grandchildren care—both generations care	0.08	0.12	0.10
Grandchildren care—absence care	0.30*	−0.06	0.01
Older relative care—both generations care	0.10	0.11	−0.17
Older relative care—absence care	0.30*	−0.06	−0.28*
Both generations care—absence care	0.20*	−0.17	−0.10

SD: standard deviation.
*Small *effect size*.

slightly poorer health than those who care for their grandchildren and those that do not assume frequent care. Again, these results partially support hypothesis 3.

Relationship between psychological resources, social support and stress levels, physical health and psychological health

As shown in Table 2, the majority of the psychological resources analyzed (coping strategies of acceptance and using emotional support, emotional intelligence, and optimism) showed a similar pattern, negatively correlating with perceived stress and positively correlating with psychological health. In addition, both the coping strategies acceptance and optimism positively correlated with physical health. Meanwhile, the coping strategy denial correlated positively with stress and negatively with psychological health, whereas self-blame correlated negatively with psychological health.

On the other hand, the amount of perceived social support negatively correlates with stress levels and positively with physical health and psychological health. These results confirm hypothesis 4.

Global model of relationships between sociodemographic characteristics, family context, psychological resources and social support, as well as stress levels, physical health and psychological health

Following hypothesis 5 and taking into account the bivariate results obtained in this study, a

model displaying the relationships between variables, tested using structural equations, was created. The stable relationships found in Pearlin's theoretical model (Pearlin et al., 1990) were taken into consideration, and contributions from more recent studies were also added.

Table 4. Adjustment indices for the compared structural equation models.

Adjustment indices	Initial model	Final model
χ^2	484.774	220.829
Gl	366	203
p	0.000	0.185
χ^2/gl	1.324	1.04
NNFI	0.750	0.937
CFI	0.775	0.944
IFI	0.791	0.949
MFI	0.528	0.909
SRMR	0.111	0.097
RMSEA	0.059	0.031
(IC 90%)	(0.044–0.073)	(0.000–0.055)
R^2 stress	0.467	0.447
R^2 health	0.706	0.692

NNFI: Non-Normed Fit Index; CFI: Comparative Fit Index; IFI: Incremental Fit Index; MFI: McDonald fit index; SRMR: standardized root-mean-square residual; RMSEA: root mean square error of approximation.

The initial model (Figure 1) shows acceptable indicators of adjustment, as the indices in Table 4 show. However, due to the low load of certain parameters, combined with the results of the LM and Wald tests applied to this model, changes have been introduced in the final model (Figure 2). To avoid redundancies between perceived social support and the use of emotional support, items from the questionnaire related specifically to the availability of people with whom to talk and from whom to receive advice have been eliminated in this modification. Other items that were eliminated in the second model include the perception of economic conditions, the coping strategies denial and self-blame, as well as the correlation between age and health.

The final model shows better adjustment indicators compared with the initial model, taking into consideration the number of variables used in each case, as shown in Table 4. We can therefore conclude that this structure adapts better to the data analyzed.

As can be observed in Figure 2, the main factor in this model is stress, and the dependent

Figure 2. Final model of the influence of sociodemographic variables, psychological resources, and social relationships on stress and health.

variables physical health and psychological health have been combined into one factor in which psychological health has a higher load (0.92).

Regarding the stress of the women studied, age, the coping strategies acceptance and using emotional support, optimism and perceived social support, are all emphasized, maintaining the significance of the correlations found in the bivariate analyses. Coping strategies based on using emotional support is highly related to the Duke-UNC Functional Social Support Questionnaire (Broadhead et al., 1988), despite having eliminating items referring to the availability of people to talk to and from whom to receive advice from this scale. The effect that age, social support, and the different psychological resources have on stress constitutes 44.7percent of the explained variance.

At the same time, stress decreases with a high health score (weight of −0.73), which combines physical and psychological health. Although this factor is greatly determined by perceived stress, it is also directly affected by other variables. Specifically, health improved as education level, emotional intelligence, and optimism increased. Despite not finding a relationship in the bivariate analyses between the regular care of family members and health, these variables became relevant in the global model when considering the influence of other variables. Specifically, caring for grandchildren slightly improved health, whereas caring for at least an older relative worsened health.

On the other hand, there are some indirect effects on both stress and health. Optimism and acceptance were positively correlated (load of 0.47), which is why acceptance could be affecting health not only through stress but also through optimism. Similarly, the effect of optimism on stress could be greater when combined with acceptance.

Likewise, conflictive family relationships correlate with caring for an older relative, although they do not have a direct influence on stress nor on health. However, this variable is inversely related to emotional intelligence, which is why conflictive family relationships associate with worse health, mediated by their negative influence on this psychological resource.

When combined, the overall influence of the analyzed variables constitutes 69.2percent of the explained variance of the women's health. Thus, this model shows a high predictive capacity and, in general terms, confirms hypothesis 5.

Discussion

Unsurprisingly, family care is much present in the daily life of the women studied. Slightly more than half (55%) regularly care for their grandchildren and an even higher proportion (59.1%) regularly care for at least an older relative. Although these percentages are higher for these women than for the general population of women in this age group (IMSERSO, 2014; Instituto Nacional de Estadística (INE), 2015; Künemund, 2006), it corresponds with the expected figures for women in the "sandwich generation" (Chassin et al., 2010; Železná, 2018).

Despite the frequency with which most of these women find themselves providing family care, and the additional stress that certain authors argue women of the "sandwich generation" experience (Fuentecilla et al., 2019; Huvent-Grelle et al., 2015), this study observes adequate levels of stress and health. Nevertheless, analysis based on effect size has shown mild differences between women in this generation who assume frequent family care and those who do not. Moreover, this effect consistently shows more stress in women caregivers, regardless of the kinship with the care recipient. This trend suggests that assuming care may be not as innocuous for this generation of women as it seems to be at first.

On the other hand, the women who care for older relatives show slightly poorer health than those who care for their grandchildren and those that do not assume frequent cares. This result suggests that possibly the most negative consequences for this generation of women of caring for a family member appears when the care recipient is an older relative. This trend, although based on weak data, seems to be confirmed in the final model of this study and is in

line with the intergenerational stake hypothesis proposed several decades ago (Giarrusso et al., 1995) and corroborated by current studies (Hämäläinen and Tanskanen, 2019; Xu and Chi, 2018). According to this theory, people tend to invest more in and value more positively their relationships with their children and grandchildren than with their parents and grandparents.

The variables related to primary and secondary stressors, as well as contextual and mediating factors, involved in the adjustment of grandmothers in the "sandwich generation," have been identified through the multilevel analysis realized in this study. The explained variance of stress levels (44.7%) and the variance of health (69.2%), through stress and the interaction of the rest of the included variables, show a high predictive capacity.

The literature confirms the influence of stress on the care providers' health (Abramson, 2015); however, not all variables influence health through stress. Certain characteristics of the care provider and their family context have a direct effect on health. Specifically, a higher education level, the frequent care of grandchildren, optimism, and emotional intelligence improve health, whereas caring for ascendant family members and conflictive family relationships worsen health, regardless of whether the person perceives stress in their daily life or not.

The relevant scientific literature has inconsistently described the relationship between education level and the care provider's health. Whereas many studies identify a low education level as a clear risk factor for health (Von-Känel et al., 2008; Wang et al., 2011), others find no relationship or argue that its influence acts indirectly through a lower income level (Dupuis et al., 2004). However, the results of this study find that, despite a relationship between economic conditions and health, education level has a direct influence on the health of these women.

Surprisingly, age does not appear to be a direct determinant of health in this model. This can be explained in two ways: first, health in the model is represented more by psychological health than physical health, the latter of the two which suffers more with age (Whitbourne and Whitbourne, 2012); second, all the women in the sample are from the same generation and therefore age variance is very small (=5.85), probably not enough to be able to observe certain long-term changes in physical health.

Nonetheless, age is associated with lower stress, which in turn is related to better health; however, the literature is inconclusive regarding the relationship between age and stress. On one hand, age has been identified as a stress factor in care providers (Luchesi et al., 2015). However, in studies where the sample is not restricted to the same generation and/or a specific type of care, the effect of age could be confused with another related factor: the kinship with the care recipient. Different studies point out that caring for a spouse or partner is more stressful than caring for an ascendant, be it father, mother, or in-laws (Liu and Lou, 2017; Pinquart and Sörensen, 2011). On the other hand, although as age increases so does the probability of suffering certain objectively adverse events such as illnesses, the loss of loved ones, or a reduction in income, in general terms, older people tend to report less stress than younger people (Aldwin and Yancura, 2010; Helvik et al., 2016). Some authors explain this apparent contradiction through the way in which older people evaluate problems: age and acquired experience encourage a broader perspective and a less stressful perception of problems when facing life challenges (Boeninger et al., 2009).

Concurrently, social support has a buffering effect on the health of these women care providers by reducing stress, a phenomenon that has been widely documented in the literature (Freire and Ferradás, 2016; Kikuzawa, 2016; Knight and Losada, 2011). The fact that perceived social support appears highly related (load of 0.50) to the use of emotion support as a coping strategy in this model, even after eliminating the specific items'availability to talk and receive advice from the scale, points to the importance of the availability of social support in order to effectively use emotional support. It

is very likely that the correlation is two-directional, meaning that in order to understand the final effect of social support on stress we must consider not only the perception of available support, but also its use as emotional support.

The care providers' acceptance of the situation has been repeatedly associated with lower levels of stress and better health (Alpert and Womble, 2015). In this sense, the results found in this study are within our expectations and attest to efficient use of emotion-based strategies in the context of informal care, in which the stressful situation develops in the interpersonal area and is generally perceived as uncontrollable (Austenfeld and Stanton, 2004).

In this model, family context affects health directly, not through stress as one might expect. Specifically, caring for grandchildren—which a priori does not seem to relate to higher stress nor to better physical or psychological health—upon combining its influence along with that of the rest of the analyzed variables, it is related to better overall health. This finding indicates that caring for grandchildren, far from being a source of additional stress, could be a protector factor for these women's health (Fuentecilla et al., 2019; Hughes et al., 2007; Luna et al., 2016a). However, caring for an ascendant family member slightly worsens health, especially when there are family conflicts. These conflicts, whose moderating effect on the care provider's wellbeing has been widely documented (Leow and Chan, 2017; Silverberg et al., 2009), are associated with caring for ascendant family members, but not with caring for grandchildren. In addition, family conflicts indirectly influence the health of the studied women through their influence on emotional intelligence.

The inverse relationship found between family conflicts and emotional intelligence could be acting in two directions. On one hand, high emotional intelligence in the areas of flexibility, stress tolerance, and impulse control could lead to better management of the family conflicts that may arise in the caregiving context. Furthermore, family conflicts, whether derived from the caregiving situation of or not, could decrease the ability to manage other emotionally demanding situations (Silverberg et al., 2009), leading to less flexibility, stress tolerance, or impulse control and, hence, worsen the health of the women care providers.

In this study, emotional intelligence, after controlling the effect of education level, does not seem to moderate between stress and mental health, as other authors have suggested (Ciarrochi et al., 2002), but rather influences health directly, although mildly (load of 0.07). The previous literature has described the casual relationship between emotional intelligence and health in regard to both the general population (Martins et al., 2010) and in the context of informal care, either moderated by the effects of stress (Lovell and Wetherell, 2016; Ruiz-Robledillo and Moya-Albiol, 2014) or directly linked to lower levels of anxiety and depression in the care providers (Marguerite et al., 2017; Weaving et al., 2014).

In this study, optimism—linked to using acceptance as a coping strategy—is the only variable with direct influence on both stress and health. Although few studies have been conducted on the role of optimism in the context of caregiving (Pinquart and Duberstein, 2005), in those that have been conducted, its presence has been related to lower levels of depression and psychological disorders (Matthews et al., 2004) and with higher resilience (Deist and Greef, 2017). The relationship between optimism and facing difficulties and, in particular, with acceptance, has been identified by certain authors as the key to understanding the effects of optimism on psychological health (Daukantaite, 2014). Optimistic people tend to trust that they will achieve their goals, and this confidence leads them to face difficulties and accept the existence of stressors more than avoid them, perceiving it as a challenge. In this sense, optimism would be acting in two directions. On one hand, through its relationship with acceptance optimism helps one to evaluate the caregiving situation not as a highly stressful situation but rather as another life circumstance to overcome. On the other hand, a positive attitude of accepting reality and being hopeful for the future enables them to experience more positive emotions and fewer

physical and psychological symptoms during adverse moments (Carver, 2014).

Although previous research has already described the effects of many of these factors on the stress and health of women care providers, this study combines the effects of different characteristics of the care providers and their family context, distinguishing between caring for grandchildren or caring for an older relative, and including factors less studied such as emotional intelligence or optimism. In addition, the study is conducted with a large sample, compared with most studies on the mental and physical health of caregivers (Teixeira et al., 2019; Van der Lee et al., 2014), and on an ever-growing and seldom studied population until now, allowing us to offer data regarding the effects of caregiving on health from a global and multigenerational perspective. However, for future research it would be ideal to conduct longitudinal studies and with probabilistic samples, in addition to incorporating the influence of more characteristics of the care providers.

The results of this study show how optimism, emotional intelligence, social support, and the use of specific coping strategies focused on emotion—such as acceptance of the situation and using emotional support—contribute to better health in the women of the "sandwich generation" and indicate the need to establish psychosocial intervention programs directed toward promoting these resources. Thus, these results are useful for planning psychological interventions with these women, supporting techniques based on cognitive stress management. Moreover, these programs should consider the relevance that family relationships have shown to have for the grandmothers in the "sandwich generation," directly manifested by the negative consequences of family conflicts but also indirectly through the positive effect of social support and the frequent use of emotional support. Thus, interventions aimed to improve family environment and to promote the acknowledgment of the incalculable value of the caring tasks that these women are carrying out within the family should not be missing in these kinds of programs.

In addition, it would be convenient for these programs to include psycho-educational techniques such as cognitive restructuration that allow these women to reinterpret their situation as caregivers in a more positive and constructive way. These interventions, accompanied by the promotion of optimism thinking, will be especially useful for these women to cope with caregiving with positive expectations and hope, which could help them view it more as a challenge than as a threat to their lives.

In conclusion, this study focuses on a group of women who are resilient and valuable to our society. However, due to their invisibility, their needs tend to be ignored. We propose concrete orientations to reduce their stress and improve their health.

Acknowledgements

This study was conducted in collaboration with Dr Jesús J. Ferreiro Casillas, the Classroom of the experience of the University of Seville, as well as city councils, nursing homes, care units, and associations that havefacilitatedthedatacollection.Acknowledgements are also extended to Ian Scionti for the language support and his reviews. The voluntary participation of the women caregivers who took part in this study is gratefully acknowledged.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Abramson TA (2015) Older adults: The "Panini Sandwich" generation. *Clinical Gerontologist* 38(4): 251–267.

Aldwin C and Yancura L (2010) Effects of stress on health and aging: Two paradoxes. *California Agriculture* 64(4): 183–188.

Alpert JM and Womble FE (2015) Coping as a caregiver for an elderly family Member. *Health Communication* 30(7): 714–721.

Austenfeld JL and Stanton AL (2004) Coping through emotional approach: A new look at emotion, coping, and health-related outcomes. *Journal of Personality* 72(6): 1335–1364.

Bar-On R (1997) *The Bar-On Emotional Quotient Inventory (EQ-i): A Test of Emotional Intelligence*. Toronto, Canada: Multi-Health Systems.

Bellón JA, Delgado A, Luna J, et al. (1996) Validez y habilidad del cuestionario de apoyo social funcional Duke-UNC-11. *Atención Primaria* 18: 153–163.

Boeninger DK, Shiraishi RW, Aldwin CM, et al. (2009) Why do older men report lower stress ratings? Findings from the Normative Aging Study. *The International Journal of Aging and Human Development* 68(2): 149–170.

Boogaard JA, Van der Steen JT, De Boer AH, et al. (2019) How is end-of-life care with and without dementia associated with informal caregivers' outcomes? *American Journal of & Palliative Medicine* 36(11): 1008–1015.

Broadhead WE, Gehlbach SH, Degruy FV, et al. (1988) The Duke-UNK functional social support questionnaire: Measurement of social support in family medicine patients. *Medical Care* 26: 709–723.

Carver CS (1997) You want to measure coping but your protocol' too long: Consider the brief cope. *International Journal of Behavioral Medicine* 4: 92–100.

Carver CS (2014) Optimism. In: Michalos AC (ed.) *Encyclopedia of Quality of Life and Well-Being Research*. Dordrecht: Springer, pp. 4500–4503.

Castejón JL, Cantero MP and Pérez L (2008) Diferencias en el perfil de competencias socioemocionales en estudiantes universitarios de diferentes ámbitos académicos. Revista Electrónica de Investigación Psicoeducativa 6: 339–362.

Centro de Investigaciones Sociológicas (2014) Indicador de confianza del consumidor (Estudio nº3014).Availableat:http://www.cis.es/cis/export/sites/default/-Archivos/Marginales/3000_3019/3014/es3014mar.pdf

Chappell NL, Dujela C and Smith A (2015) Caregiver well-being: Intersections of relationship and gender. *Research on Aging* 37(6): 623–645.

Chassin L, Macy JT, Seo DC, et al. (2010) The association between membership in the sandwich generation and health behaviors: A longitudinal study. *Journal of Applied Developmental Psychology* 31(1): 38–46.

Ciarrochi J, Deane FP and Anderson S (2002) Emotional intelligence moderates the relationship between stress and mental health. *Personality and Individual Differences* 32(2): 197–209.

Cohen S and Williamson GM (1988) Perceived stress in a probability sample of the United States. In: Spacapan S and Oskamp S (eds) *The Social Psychology of Health*. Newbury Park, CA: SAGE, pp. 31–67.

Daukantaite D (2014) Optimism-pessimism, dispositional. In: Michalos AC (ed.) *Encyclopedia of Quality of Life and Well-Being Research*. Dordrecht: Springer, pp. 4503–4506.

Deist M and Greef AP (2017) Living with a parent with dementia: A family resilience study. *Dementia* 16: 126–141.

Di-Gessa G, Glaser K and Tinker A (2015) The health impact of intensive and nonintensive grandchild care in Europe: New evidence from SHARE. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 71(5): 867–879.

Do EK, Cohen SA and Brown MJ (2014) Socioeconomic and demographic factors modify the association between informal caregiving and health in the Sandwich Generation. *BMC Public Health* 14(1): 362–370.

Dukhovnov D and Zagheni E (2015) Who takes care of whom in the United States? Time transfers by age and sex. *Population and Development Review* 41(2): 183–206.

Dupuis SL, Epp T and Smale B (2004) *Caregivers of Persons with Dementia: Roles, Experiences, Supports and Coping: A Literature Review*. Murray Alzheimer Research and Education Program, University of Waterloo. Available at: http://www.helpingyoucare.com/wp-content/uploads/2010/11/Caregivers-of-Persons-with-Dementia-Roles-Experiences-Supports-and-Coping-A-Literature-Review.pdf

Fekete M, Szabo A, Stephens C, et al. (2019) Older New Zealanders in caregiving roles: Psychological functioning of caregivers of people living with dementia. *Dementia* 18(5): 1663–1678.

Fingerman KL, Kim K, Tennant PS, et al. (2016) Intergenerational support in a daily context. *The Gerontologist* 56: 896–908.

Freire C and Ferradás MDM (2016) *Calidad de vida y bienestar en la vejez*. Madrid:Ediciones Pirámide.

Fuentecilla JL, Liu Y, Hou M, et al. (2019) Midlife adults' daily support to children and parents: Implications for diurnal cortisol. *Journal of Aging and Health*. Epub ahead of print 22 July. DOI: 10.1177/0898264319863994.

Giarrusso R, Stallings M and Bengtson VL (1995) The intergenerational stake's hypothesis revisited: Parent-child differences in perceptions of relationships 20 years later. In: Bengtson Vl, Schaie KW and Burton L (eds)*Intergenerational Issues in Aging*. New York: Plenum Press, pp. 227–263.

Goldzweig G, Merims S, Ganon R, et al. (2012) Coping and distress among spouse caregivers to older patients with cancer: An intricate path. *Journal of Geriatric Oncology* 3(4): 376–385.

Hämäläinen H and Tanskanen AO (2019) "Sandwich generation": Generational transfers towards adult children and elderly parents. *Journal of Family Studies*. Epub ahead of print 8 March. DOI: 10.1080/13229400.2019.1586562.

Helvik AS, Bjørkløf GH, Corazzini K, et al. (2016) Are coping strategies and locus of control orientation associated with health-related quality of life in older adults with and without depression? *Archives of Gerontology and Geriatrics* 64: 130–137.

Hu LT and Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal* 6(1): 1–55.

Hughes ME, Waite LJ, La-Pierre TA, et al. (2007) All in the family: The impact of caring for grandchildren on grandparents' health. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 62(2): 108–119. DOI: 10.1093/geronb/62.2.S108.

Huvent-Grelle D, Boulanger E, Beuscart JB, et al. (2015) "Women in the middle": An observational study of a generation story in Alzheimer disease in France. *European Geriatric Medicine* 6: 124–127.

Instituto de Mayores y Servicios Sociales (IMSERSO) (2005). Cuidados a las Personas Mayores en los Hogares Españoles. El entorno familiar. Available at: http://www.imserso.es/InterPresent1/groups/imserso/documents/binario/cuidadospp-mmhogares.pdf

InstitutodeMayoresyServiciosSociales(IMSERSO) (2014) Las personas mayores en España. Datos estadísticos estatales y por comunidades autónomas. Informe .2014. Available at: http://www.imserso.es/InterPresent2/groups/imserso/documents/binario/22029_info2014pm.pdf

Instituto Nacional de Estadística (INE) (2015). Encuesta Europea de Salud 2014. Determinantes de salud. Cifras relativas. Available at: http://www.ine.es/dynt3/inebase/es/index.htm?type=pcaxis&path=/t15/p420/a2014/p06/&file=pcaxis

Kenny P, King MT and Hall J (2014) The physical functioning and mental health of informal carers: Evidence of care-giving impacts from an Australian population-based cohort. *Health and Social Care in the Community* 22(6): 646–659.

Kikuzawa S (2016) Social support and the mental health of family caregivers: Sons and daughters caring for aging parents in Japan. *International Journal of Japanese Sociology* 25(1): 131–149.

Kim MH, Dunkle RE, Lehning AJ, et al. (2017) Caregiver stressors and depressive symptoms among older husbands and wives in the United States. *Journal of Women & Aging* 29(6): 494–504.

Knight B and Losada A (2011) Family caregiving for cognitively or physically frail older adults: Theory, research, and practice. In: Schaie KW and Willis SL (eds) *Handbook of the Psychology of Aging* (7th edn). New York: Academic Press, pp. 353–365.

Kroenke CH, Hankinson SE, Schernhammer ES, et al. (2004) Caregiving stress, endogenous sex steroid hormone levels, and breast cancer incidence. *American Journal of Epidemiology* 159(11): 1019–1027. DOI: 10.1093/aje/kwh148.

Künemund H (2006) Changing welfare states and the "sandwich generation": Increasing burden for the next generation? *International Journal of Ageing and Later Life* 1(2): 11–29.

Lazarus R and Folkman S (1984) *Stress, Appraisal and Doping*. New York: Springer.

Leow MQ and Chan SW (2017) The challenges, emotions, coping, and gains of family caregivers caring for patients with advanced cancer in Singapore: A qualitative study. *Cancer Nursing* 40(1): 22–30.

Liu H and Lou WQV (2017) Continuity and changes in three types of caregiving and the risk of depression in later life: A 2-year prospective study. *Age and Ageing* 46(5): 827–832.

Liu Y, Fu R, Roberto KA, et al. (2019) Depressive symptoms among adult children caregivers in China: Moderating effects of working status

and gender. *Aging & Mental Health* 23(10): 1391–1399.

Lovell B and Wetherell MA (2016) Behaviour problems of children with ASD and perceived stress in their caregivers: The moderating role of trait emotional intelligence? *Research in Autism Spectrum Disorders* 28: 1–6.

Lucas-Carrasco R (1998) *Versión española del WHOQOL*. Majadahonda: Ergón.

Luchesi BM, Degani GC, Brígola AG, et al. (2015) Evaluation of depressive symptoms in older caregivers. *Archives of Clinical Psychiatry* 42(2): 45–51.

Luna S, Ramos P and Rivera F (2016a) Abuelas y cuidados múltiples en familias de cuatro generaciones. In: *III Jornadas Nacionales de Psicología del Envejecimiento*, Madrid, 6–7 October.

Luna S, Ramos P and Rivera F (2016b) Coping strategies, stress and health of grandmothers caring for ascending and descending relatives. *Studies in Psychology* 37(1): 90–114.

Lynch K, Lyons M and Cantillon S (2007) Breaking silence: Educating citizens for love, care and solidarity. *International Studies in Sociology of Education* 17(1–2): 1–19.

Ma M, Dorstyn D, Ward L, et al. (2018) Alzheimers' disease and caregiving: A meta-analytic review comparing the mental health of primary carers to controls. *Aging & Mental Health* 22(11): 1395–1405.

Marguerite S, Laurent B, Marine A, et al. (2017) Actor-partner interdependence analysis in depressed patient-caregiver dyads: Influence of emotional intelligence and coping strategies on anxiety and depression. *Psychiatry Research* 258: 396–401.

Martins A, Ramalho N and Morin E (2010) A comprehensive meta-analysis of the relationship between emotional intelligence and health. *Personality and Individual Differences* 49(6): 554–564.

Matthews BA, Baker F and Spillers RL (2004) Family caregivers' quality of life: Influence of health protective stance and emotional strain. *Psychology & Health* 19(5): 625–641.

McDonald RP and Ho MHR (2002) Principles and practice in reporting structural equation analyses. *Psychological Methods* 7(1): 64.

Morán C, Landero R and González MT (2010) COPE-28: un análisis psicométrico de la versión en español del Brief COPE. *Universitas Psychologica* 9(2): 543–552.

Musil CM, Gordon NL, Warner CB, et al. (2011) Grandmothers and caregiving to grandchildren: Continuity, change, and outcomes over 24 months. *The Gerontologist* 51: 86 –100. DOI: 10.1093/geront/gnq061.

Otero JM, Luengo A, Romero E, et al. (1998) *Psicología de la personalidad: Manual de prácticas*. Barcelona: Ariel Practicum.

Pavalko EK (2011) Caregiving and the life course: Connecting the personal and the public. In: Settersten RA and Angel JL (eds) *Handbook of Sociology of Aging*. New York: Springer, pp. 603–616.

Pearlin LI (1989) The sociological study of stress. *Journal of Health and Social Behavior* 30(3): 241–256.

Pearlin LI and Bierman A (2013) Current issues and future directions in research into the stress process. In: Aneshensel CS, Phelan JC and Bierman A (eds) *Handbook of the Sociology of Mental Health*. Dordrecht: Springer, pp. 325–340. DOI: 10.1007/978-94-007-4276-5_16.

Pearlin LI, Mullan JT, Semple SJ, et al. (1990) Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist* 30(5): 583–594.

Pine J and Steffen AM (2019) Intergenerational ambivalence and dyadic strain: Understanding stress in family care partners of older adults. *Clinical Gerontologist* 42(1): 90–100.

Pinquart M and Duberstein PR (2005) Optimism, pessimism, and depressive symptoms in spouses of lung cancer patients. *Psychology & Health* 20(5): 565–578.

Pinquart M and Sörensen S (2011) Spouses, adult children, and children-in-law as caregivers of older adults: A meta-analytic comparison. *Psychology and Aging* 26(1): 1–14.

Remor E and Carrobles JA (2001) Versión Española de la escala de estrés percibido (PSS-14): Estudio psicométrico en una muestra VIH+. *Ansiedad y Estrés* 7(2–3): 195–201.

Revenson TA, Griva K, Luszczynska A, et al. (2016) Caregiving outcomes. In: Revenson TA, Griva K, Luszczynska A, et al. (eds) *Caregiving in the Illness Context*. London: Palgrave Pivot, pp. 15–24.

Ruiz-Robledillo N and Moya-Albiol L (2014) Emotional intelligence modulates cortisol awakening response and self-reported health in caregivers of people with autism spectrum disorders. *Research in Autism Spectrum Disorders* 8(11): 1535–1543.

Scheier MF and Carver CS (1985) Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology* 4: 219–247.

Silverberg S, Baete D and Shirai Y (2009) Caregiving for elder relatives: Which caregivers experience personal benefits/gains? *Archives of Gerontology and Geriatrics* 48(2): 238–245.

Tabachnick BG and Fidell LS (2007) *Experimental Designs Using ANOVA*. Belmont, CA: Thomson/Brooks/Cole.

Teixeira RJ, Remondes Costa S, Graça Pereira M, et al. (2019) The impact of informal cancer caregiving: A literature review on psychophysiological studies. *European Journal of Cancer Care* 28(4): e13042.

Trapp SK, Perrin PB, Aggarwal R, et al. (2015) Personal strengths and health related quality of life in dementia caregivers from Latin America. *Behavioural Neurology* 2015: 507196.

Van der Lee J, Bakker TJ, Duivenvoorden HJ, et al. (2014) Multivariate models of subjective caregiver burden in dementia: A systematic review. *Ageing Research Reviews* 15: 76–93.

Vitaliano PP, Young HM and Zhang J (2004) Is caregiving a risk factor for illness? *Current Directions in Psychological Science* 13: 13–16.

Von-Känel R, Mausbach BT, Patterson TL, et al. (2008) Increased Framingham Coronary Heart Disease Risk Score in dementia caregivers relative to non-caregiving controls. *Gerontology* 54(3): 131–137.

Walsh E and Murphy A (2019) Examining the effects of activities of daily living on informal caregiver strain. *Journal of Health Services Research & Policy*. Epub ahead of print 7 August. DOI: 10.1177/1355819619848025.

Wang YN, Shyu YIL, Chen MC, et al. (2011) Reconciling work and family caregiving among adult-child family caregivers of older people with dementia: Effects on role strain and depressive symptoms. *Journal of Advanced Nursing* 67(4): 829–840.

WeavingJ,OrgetaV,OrrellM,etal.(2014)Predicting anxiety in carers of people with dementia: The role of trait emotional intelligence. *International Psychogeriatrics* 26(7): 1201–1209.

Whitbourne SK and Whitbourne SB (2012) Demography of aging. In: Whitbourne SK and Sliwinski MJ (eds) *The Wiley-Blackwell Handbook of Adulthood and Aging*. Oxford: Wiley-Blackwell, pp. 25–48.

Whitley DM and Fuller-Thomson E (2016) African–American solo grandparents raising grandchildren: A representative profile of their health status. *Journal of Community Health* 42(2): 312–323.

Wong CSC and Zelman DC (2019) Caregiver expressed emotion as mediator of the relationship between neuropsychiatric symptoms of dementia patients and caregiver mental health in Hong Kong. *Aging & Mental Health*. Epub ahead of print 5 July. DOI: 10.1080/13607863.2019.1636200.

World Health Organization Quality of Life (WHOQOL) Group (1995) The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine* 41: 1403–1409.

Xu HW (2018) Physical and mental health of Chinese grandparents caring for grandchildren and great-grandparents. *Social Science & Medicine* 229: 106–116.

Xu L and Chi I (2018) Determinants of support exchange between grandparents and grandchildren in rural China: The roles of grandparent caregiving, patrilineal heritage, and emotional bonds. *Journal of Family Issues* 39(3): 579–601.

Železná L (2018) Caregiving to grandchildren and elderly parents: Role conflict or family solidarity? *Ageing & Society* 38: 974–994.