

# Life satisfaction and the mediating role of character strengths and gains in informal caregivers

Fernando Javier García-Castro<sup>1</sup>  | Ana Hernández<sup>2</sup>  | María J. Blanca<sup>1</sup> 

<sup>1</sup>Department of Psychobiology and Behavioural Sciences Methodology, University of Malaga, Malaga, Spain

<sup>2</sup>Department of Methodology of Behavioural Sciences and IDOCAL, University of Valencia, Valencia, Spain

## Correspondence

María J. Blanca, Facultad de Psicología, Universidad de Málaga, Campus Universitario de Teatinos, s/n, Málaga 29071, Spain.  
E-mail: blamen@uma.es

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## Accessible Summary

### What is known on the subject?

The role of informal caregiver can have both negative and positive consequences for a person's well-being. The main theoretical framework for explaining these consequences is the stress process model, which considers contextual variables, stressors and mediating/moderating factors. The latter are psychosocial factors such as coping strategies, personal mastery, social support or beliefs and values which may influence caregiver well-being. The perception of gains in caregiving has also been proposed as a mediating variable since it may act as a coping strategy. However, few studies have examined values and perceived gains as mediating variables with life satisfaction as the outcome.

### What the paper adds to existing knowledge?

This study explores the role of character strengths and caregiver gains as mediators between stressors and life satisfaction in informal caregivers of persons with dementia. The results identify hope as a key character strength, its lack being one pathway through which stress may lead to low life satisfaction and low perceived gains from caregiving.

### What are the implications for practice?

Caregivers who experience a lack of hope may be less able to generate goals and be less motivated to achieve them. Our findings are relevant to gerontological nursing based on the Senses Framework as they confirm the importance of the senses of purpose and achievement. Nursing and care staff can play an active role in helping informal caregivers to meet their goals by promoting these two senses, thereby fostering a more positive caregiving experience.

## Abstract

**Introduction:** Being an informal caregiver can have both negative and positive consequences for well-being. Within the framework of the stress process model, few studies have examined values and perceived gains of caregiving as mediating variables of life satisfaction.

**Aim:** To explore the role of character strengths and perceived gains as mediators in the association between life satisfaction and primary and secondary stressors in informal caregivers of persons with dementia.

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**Method:** Participants were 112 informal caregivers. Hierarchical regression, correlation and mediation analyses were performed.

**Results:** Lower life satisfaction was associated with being female, unmarried, caring for someone with greater cognitive impairment, a higher level of stress, having restricted leisure time and perceiving financial difficulties. Hope mediated the associations between perceived stress and both life satisfaction and perceived gains of caregiving.

**Discussion:** Hope is a key strength and its lack is one pathway through which stress may cause low satisfaction and low perceived gains from caregiving.

**Implications for practice:** Without hope, it is difficult for caregivers to generate goals and be motivated to achieve them. Nursing and care staff should aim to promote a sense of purpose and achievement among informal caregivers so as to foster a more positive caring experience.

#### KEYWORDS

hope, indirect effect, love, perceived stress, senses framework, stress process model

## 1 | INTRODUCTION

Dementia is characterised by a progressive global deterioration in cognitive ability and the capacity for independent living. It affects different cognitive functions, including memory, learning, orientation, language, comprehension and judgement, and it generally affects older adults (Alzheimer's Association, 2016; Prince & Jackson, 2009). Most people with dementia require some form of personal care as the disease progresses (Prince et al., 2013; Prince & Jackson, 2009).

An informal caregiver is an unpaid person, usually, a friend or relative, who assists another person with reduced health to fulfil his or her needs. The role of caring for a person with dementia can have several negative consequences, including burden, depression, anxiety, stress, social isolation, decreased well-being and quality of life, sleep difficulties and a heightened risk of cardiovascular disease (Conde-Sala et al., 2010; Kim et al., 2012; Raivio et al., 2015; Roepke et al., 2012; Settineri et al., 2014). Because dementia-related symptoms worsen progressively over time, informal caregivers will have to assume increased responsibility as the person with dementia deteriorates, and as a result, they are likely to experience increased stress and burden (Chiao et al., 2015). Research also suggests, however, that informal caregiving may have positive consequences and benefits, such as finding meaning through care, increased life satisfaction, personal and spiritual growth, and improved interpersonal relationships (Cheng et al., 2013; Netto et al., 2009; Rapp & Chao, 2000; Sanders, 2005). In this context, the term gains refer to positive appraisals experienced as a result of the caregiving role (Kramer, 1997).

The main theoretical framework for explaining the consequences of the caregiving experience is the stress process model (Pearlin & Bierman, 2013; Pearlin et al., 1990). This model considers various factors which may interact and determine how a person reacts to this role. These are as follows: (1) contextual factors, such as the caregiver and care recipient's sociodemographic characteristics (e.g. gender, age or educational level), or variables related to caregiving (e.g. how long a person has fulfilled this

role); (2) primary stressors, which refers to stress factors directly related to the health of the care recipient and the degree of the care needed, which may be objective (e.g. cognitive impairment or challenging behaviour) or subjective (e.g. perception of overload); (3) secondary stressors, that is, stress factors beyond the caregiving role, such as restriction of social life, difficulties at work or financial strain; and (4) mediating and moderating factors that can determine how well caregivers cope with their role and which may account for variability in the health consequences they experience. Among the latter, Pearlin and Bierman (2013) include factors such as coping strategies, personal mastery, social support, beliefs and values. Contextual variables, stressors, and mediators and moderators may influence health outcomes such as well-being, depression, anxiety, burden, etc.

The direct relationship between contextual factors, stressors and health outcomes has been widely studied in informal caregivers of persons with dementia. For example, greater caregiver burden has been related to being female, older and a spousal caregiver, having a lower educational level, having spent longer in the caregiving role, living with the care recipient, not having assistance (Chiao et al., 2015; Kim et al., 2012), a more advanced stage of disease and more behavioural problems in the care recipient, and factors such as lower income, economic difficulties and restriction of leisure time (Chiao et al., 2015; Del-Pino-Casado & Ordóñez-Urbano, 2016; Park et al., 2015; Sun et al., 2009). Research also shows that caregiver burden is positively associated with depression and anxiety (Chiao et al., 2015), which in turn are negatively related to self-rated health, perceived gains of caregiving, quality of life, life satisfaction and well-being (Abdollahpour et al., 2014; Chappell & Reid, 2002; Fabà et al., 2017; Yap et al., 2010). In addition, lower life satisfaction in caregivers has been linked to being female, unmarried, unemployed, dedicating more hours to care, limited social activity, low income, low social support and social resources, low self-esteem, higher stressfulness appraisals, fewer perceived benefits associated with caregiving and more personal health problems (Borg & Hallberg,

2006; Chappell & Reid, 2002; Fabà et al., 2017; Haley et al., 2003; Niimi, 2016; Wakabayashi & Kureishi, 2018).

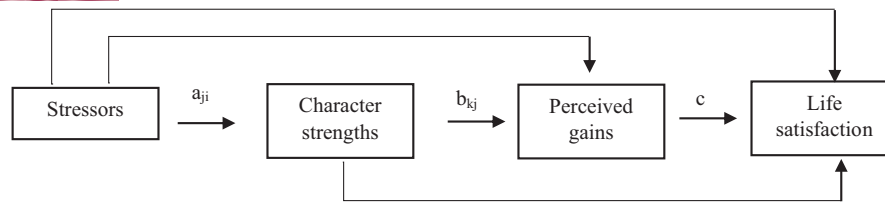
Research with informal caregivers of people with dementia has also examined the mediation/moderation effects of several variables (e.g. religiosity, self-efficacy, personal mastery, social support and coping styles) in relation to mental and physical health (McLennon et al., 2011), depression (Cheng et al., 2013; Mausbach et al., 2012) and caregiver burden (Fauziana et al., 2018; García-Castro et al., 2020; Wang et al., 2018). As already mentioned, these mediators and moderators would explain individual differences in how caregivers cope with their role (Pearlin & Bierman, 2013). However, although there is abundant evidence in relation to coping, social support or mastery, little is known about the role of beliefs and values as mediating/moderating variables in the relationship between stressors and health outcomes. Regarding values, Pearlin and Bierman (2013) suggest that the influence of a stressor may vary according to whether or not it is relevant to a person's values. In this context, the Values in Action (VIA) classification proposed by Peterson and Seligman (2004) provides a framework for analysing the role of values from the perspective of positive psychology (García-Castro et al., 2020). The VIA classification identifies several character strengths or positive personality traits that determine how individuals think, feel and behave. According to Peterson and Seligman (2004), these character strengths are measurable and relatively stable over time, although they are also flexible enough to be developed. These authors identified 24 character strengths, which they labelled as follows: appreciation of beauty and excellence, creativity, bravery, fairness, curiosity, gratitude, forgiveness, hope, honesty, humour, humility, kindness, judgment, love, leadership, love of learning, perspective, perseverance, self-regulation, prudence, spirituality, social intelligence, teamwork, and zest. Overall, research has shown that higher levels of character strengths are linked to lower levels of perceived stress, and also that strengths may function as a protective factor against perceived stress (Duan, 2016; Li et al., 2017). In this context, the endorsement of character strengths may determine how individuals react to the caregiving role, mediating the relationship between stressors and health outcomes, such that individuals who endorse certain character strengths may be able to deal more effectively with care-related stressors. A recent study by García-Castro et al. (2020) found that of the 24 strengths, hope was the most relevant in predicting caregiver burden and that it had a mediating role between perceived stress and burden, such that higher levels of perceived stress are associated with decreased hope, and this lower level of hope is one of the pathways through which stress may cause a burden.

Although mediating effects in the association between stress and negative outcomes have been extensively studied, very few studies have focussed on positive outcomes such as life satisfaction as a cognitive measure of subjective well-being. Furthermore, those studies which have considered such outcomes did not include a variety of primary and secondary stressors. For example, Khusaifan and El Keshky (2017) investigated the association between depression and life satisfaction with social support as a mediator, whereas Morano (2003) explored how appraisal of burden and satisfaction, and the

perception of support mediate the effects of caregiving on somatic complaints, depression, personal gain and life satisfaction. To the best of our knowledge, there are no studies analysing the mediating role of character strengths in the relationship between stressors and life satisfaction in informal caregivers of people with dementia. In the general population, research has shown that character strengths as a whole are positively related to psychological adjustment, quality of life, life purpose and life satisfaction, although hope, love, zest, curiosity and gratitude are the strengths most strongly associated with life satisfaction (Blanca et al., 2018; Lee et al., 2015; Ovejero et al., 2016; Park & Peterson, 2006a,b; Proyer et al., 2011).

From within the framework of positive psychology there is also evidence that caregivers who more strongly endorse certain strengths perceive more positive aspects of caregiving. Specifically, García-Castro et al., (2019) found that hope, zest, gratitude, curiosity, love, teamwork and creativity had moderate or high correlations with perceived gains, although once the overlap between them was eliminated, hope emerged as the best predictor. It should be noted that the positive aspects or perceived gains of caregiving have been proposed as a mediator variable in the stress process model, suggesting that the ability to find meaning and detect positive aspects in caregiving may act as a coping strategy, enabling the caregiver to deal more effectively with care-related stressors (Cheng et al., 2013; Fauziana et al., 2018; McLennon et al., 2011). However, the mediating effect of perceived gains in the relationship between stressors and health outcomes is limited, since studies are scarce and have included a small number of stressors or have focussed on the mediating effect in the relationship between outcome variables (Fauziana et al., 2018; McLennon et al., 2011). Further research in this regard is therefore warranted. With that in mind, it is worth noting that enhancing the positive experience of caregiving is one of the aims of the Senses Framework and relation-centred care, a platform for good practices in the care of older people proposed by Nolan et al., (2006). These authors suggested the need to create and sustain an enriched environment of care in which the needs of all participants (i.e. nurses, care recipients and caregivers) are acknowledged and addressed in order to improve the care provided. In this enriched environment, all those involved should experience a sense of security, belonging, continuity, purpose, achievement and significance, such that they are all able to flourish and grow.

Given the lack of studies with life satisfaction as an outcome, and considering values and perceived gains of caregiving as mediating variables within the framework of the stress process model, the aim of the present study was to explore the role of strengths and perceived gains as potential mediators in the relationship between life satisfaction and primary and secondary stressors in informal caregivers of individuals with dementia, controlling for contextual variables. Our hypothesis was that primary and secondary stressors would be associated with life satisfaction indirectly through character strengths, which in turn would be associated with perceived gains, determining the level of life satisfaction. To address the study objective we first identify the contextual variables (e.g. age, gender, etc.), the primary stressors (independence for activities of daily living and cognitive impairment in the care recipient, and



**FIGURE 1** Proposed mediation model, controlling for contextual variables: predictors (primary and secondary stressors), mediators (character strengths and perceived gains) and outcome (life satisfaction)

caregiver's perceived stress) and the secondary stressors (perceived financial difficulties, restriction of leisure time and difficulties at work) which are statistically significant in predicting life satisfaction. We expected to find that lower scores on life satisfaction are related to greater dependency and impairment in the care recipient, and a higher level of perceived stress and more perceived financial difficulties, difficulties at work and restriction of leisure time in the caregiver. We then analyse the relationship between life satisfaction and strengths in order to identify the strengths with the highest correlations. Here we expected to find similar results to those reported previously in the general population, namely higher correlations between life satisfaction and hope, love, zest, gratitude and curiosity. Finally, having identified the particular contextual variables, stressors and mediators that contribute most to life satisfaction, we test a mediation model consistent with the stress process model (Figure 1).

## 2 | MATERIALS AND METHOD

### 2.1 | Participants

Participants were 112 informal caregivers (87 women and 25 men) of individuals diagnosed with dementia who were recruited through various day centres for people with Alzheimer's and other dementias (Malaga, Spain). Their age ranged from 35 to 82 years old, with a mean of 56.20 ( $SD = 12.99$ ). In order to be eligible for inclusion they had to be aged 18 years or older, to have been the main caregiver for at least six months and to sign informed consent. As regards their sociodemographic characteristics, 27.68% were the care recipient's spouse, 71.43% were married, 32.14% were practising Catholics, 44.64% were employed, 36.61% had university studies, 78.57% lived with the care recipient, 71.43% perceived restriction of their leisure time, 26.79% had difficulties at work and 8.03% reported no financial difficulties. The mean time as the main caregiver was 4.86 years ( $SD = 3.80$ ; range 0.5–28 years). Regarding impairment and dependency in care recipients, only 6.25% showed no cognitive impairment and only 8.93% were independent for activities of daily living.

### 2.2 | Instruments

#### 2.2.1 | Sociodemographic questionnaire

Participants completed a questionnaire which collected caregiver sociodemographic information about their caregiving role. Variables

included in this questionnaire were the caregiver's gender, age, marital and employment status, level of education, religion, relationship to the care recipient, whether they lived with the care recipient, time as a caregiver, perceived financial difficulties, whether they perceived a restriction of leisure time and whether they had difficulties at work. The day centres provided information about care recipients, specifically their score on the MMSE and the Barthel Index as measures of cognitive impairment and independence for activities of daily living, respectively.

#### 2.2.2 | Life satisfaction

Life satisfaction was assessed with the Spanish version (Vázquez et al., 2013) of the *Satisfaction with Life Scale* (SWLS; Diener et al., 1985), which assesses the cognitive component of subjective well-being, reflecting a person's appraisal of his or her life. Each of the five scale items is rated on a seven-point Likert-type scale (from "strongly disagree" to "strongly agree"), and hence the total score ranges between 5 and 35. Higher scores indicate a higher level of life satisfaction. In the present sample, Cronbach's alpha coefficient was .89.

#### 2.2.3 | Perceived stress

Perceived stress was assessed with the Spanish version (Daza et al. 2002) of the stress scale of the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). Each of the seven scale items is rated on a four-point Likert-type scale (from "did not apply to me at all" to "applied to me very much or most of the time"), with respondents being asked to consider their experience during the past week. The total stress score, therefore, ranges between 0 and 21, and higher scores indicate a higher level of perceived stress. In the present sample, Cronbach's alpha coefficient was .88.

#### 2.2.4 | Caregiver gains

Caregiver gains were measured with the Spanish version (Fabà & Villar, 2013; Ponsoda, 2015) *Gain in Alzheimer care Instrument* (GAIN; Yap et al., 2010). The GAIN comprises ten items, each rated on a five-point Likert-type scale (from "disagree a lot" to "agree a lot"), and hence the total score ranges between 0 and 40. Higher scores indicate a higher level of perceived gains from caregiving tasks. Cronbach's alpha coefficient in the present sample was .88.

## 2.2.5 | Character strengths

Character strengths were assessed using the Virtues in Action Inventory of Strengths (VIA-IS 72; Peterson & Park, 2009; Peterson & Seligman, 2004), in its Spanish version, which was validated and provided by the VIA Institute on Character. Here we used the short version, comprising 72 items and focussing on 24 character strengths (appreciation of beauty and excellence, creativity, bravery, fairness, curiosity, gratitude, forgiveness, hope, honesty, humour, humility, kindness, judgment, love, leadership, love of learning, perspective, perseverance, self-regulation, prudence, spirituality, social intelligence, teamwork and zest). Each character strength is assessed with three items rated on a five-point Likert-type scale (from “very much unlike me” to “very much like me”), the score being computed as the average across these items. Higher scores indicate a stronger presence of that specific character strength. Cronbach's alpha coefficient ranged from .41 to .85.

## 2.3 | Procedure

We contacted various day centres for people with Alzheimer's disease and other dementias in the province of Malaga and informed them about the objective of the research. Those day centres that agreed to participate then invited caregivers who were attending the centre to take part in the study, and those who accepted were given the questionnaires to complete. All participants were informed about the purpose of the research and it was made clear to them that all the information provided would remain anonymous, and also that they could withdraw from the study at any time. After signing informed consent, they completed the questionnaires in a single one-hour session. The study was approved by the Experimentation Ethics Committee of the University of Málaga, and it was carried out in accordance with the Declaration of Helsinki.

## 2.4 | Data analysis

All the analyses were performed using SPSS 26. We first conducted a hierarchical regression in order to identify the contextual variables, primary stressors and secondary stressors that may play a role in the prediction of life satisfaction. In the first step we introduced 10 contextual variables: gender: 1-female, 0-male; age; level of education: 1-primary, 2-secondary, 3-higher (for which we created two dummy variables, with primary studies being the reference category); marital status: 1-married, 0-other; employment status: 1-in work, 0-unemployed; religion: 1-practising catholic, 0-other; relationship to care recipient: 1-spouse, 0-other; and living with care recipient: 1-yes, 0-no; time as the main caregiver. In the second step we introduced three primary stressors: independence for activities of daily living, cognitive impairment in the care recipient and caregiver's perceived stress. Finally, in the third step, we introduced three secondary stressors: perceived financial difficulties, rated from 1 to

6; restriction of leisure time: 1-yes, 0-no; and difficulties at work: 1-yes, 0-no.

We then analysed the association between life satisfaction and character strengths, calculating Pearson correlation coefficients in order to identify the strengths with the highest correlation. Following Cohen's (1988) criteria we interpreted coefficients around  $|.10|$ ,  $|.30|$  and  $|.50|$  as indicating, respectively, a small, moderate and strong correlation. The level of significance was adjusted to  $p = .002$  using Bonferroni correction. The correlation between life satisfaction and perceived gains of caregiving was also computed.

Finally, having identified the contextual variables, stressors and character strengths that significantly contribute to life satisfaction, we proceeded to test a mediation model consistent with the stress process model. Statistically significant contextual variables were introduced as control variables, primary and secondary stressors as predictors, and character strengths and perceived gains of caregiving as mediators. The hypotheses underpinning the proposed mediation model were tested using multiple regression. Specifically, we used the customization option of the PROCESS macro version 3.4 for SPSS to estimate the research model and the significance of the indirect effects involved (Hayes, 2017). In the first set of models, we regressed each of the significant strengths ( $j$ ) on the significant stressors ( $i$ ) (each yielding an estimate of coefficient  $a_{ji}$ ). Scores on gain ( $k$ ) were then regressed on the strengths considered ( $j$ ), controlling for stressors (yielding an estimate of coefficient  $b_{kj}$ ). Finally, life satisfaction was regressed on gains, controlling for both strengths and stressors (yielding an estimate of coefficient  $c$ ) (see Figure 1).

PROCESS allows researchers to test for the significance of hypothesized indirect effects by means of bootstrapping. Here we estimated the indirect effect of each stressor on life satisfaction by using the product of the coefficients involved:  $a_{ji} \cdot b_{kj} \cdot c$ . Similarly, all the other indirect effects in the model (e.g. the indirect effect of stressors on gains via character strengths) were obtained by multiplying the regression coefficients involved ( $a_{ji} \cdot b_{kj}$ ). Given that the product of regression coefficients that capture the indirect effect may not follow a normal distribution, bootstrapping has been recommended from among a number of procedures because it achieves a good balance between type I error and statistical power (Hayes, 2009; MacKinnon, 2008). In this study, 10,000 samples were bootstrapped to obtain confidence intervals for these indirect effects.

For all hypotheses involved in the research model, we performed one-tailed tests as these are appropriate when directional effects are expected (e.g. Cho & Abe, 2013), particularly in mediation research (Preacher et al., 2010). Accordingly, for indirect effects, we calculated the 90% bootstrapped confidence interval.

## 3 | RESULTS

The model obtained after introducing contextual variables in the first stage of the hierarchical regression was not statistically significant. However, the increment in  $R^2$  was significant after introducing

primary stressors in the second stage and secondary stressors in the third step. Overall, in the final step, lower scores on life satisfaction were linked to being a female caregiver, being unmarried, greater cognitive impairment in the care recipient, more perceived stress, restriction of leisure time and more perceived financial difficulties (Table 1).

Regarding the correlation analysis between life satisfaction and strengths, the results after Bonferroni adjustment indicated a significant positive relationship with hope, gratitude, zest, love and curiosity, each of which yielded a correlation coefficient higher than .30. Perceived gains of caregiving were also positively related to life satisfaction. Correlation coefficients are shown in Table 2.

In light of these results, in the mediation model tested to predict life satisfaction we controlled for two contextual variables (gender and marital status) and included two sets of predictors: two primary stressors (cognitive impairment and perceived stress) and two secondary stressors (restriction of leisure time and perceived financial difficulties). Regarding strengths, we included the five variables that showed significant correlations with life satisfaction: hope, gratitude, zest, love and curiosity. These variables were the first mediators in the model, which run in parallel. Finally, we included perceived gains of caregiving as an additional mediator that followed sequentially the five strengths (see Figure 2).

The results showed that only two stressors (perceived stress and restriction of leisure time) were significantly related to the strengths considered. Specifically, after controlling for gender and marital status, perceived stress was negatively related to hope, gratitude, zest, love and curiosity, whereas restriction of leisure time was negatively related only to love (Table 3). In addition, after partialling out the effects of the control variables and stressors, only one of the five strengths considered, namely hope, had a positive and significant relationship with perceived gains of caregiving (Table 4). However, contrary to our expectations, gains were not significantly related to life satisfaction (Table 4). These significant results, which are summarized in Figure 3, indicate that perceived gains of caregiving is not a variable that contributes to explaining the link between stressors and life satisfaction. In fact, none of the indirect effects via gains were significant.

It is important to note, however, that one of the predictors included in the model, namely perceived stress, did have an indirect effect on life satisfaction via hope. As mentioned above, perceived stress was negatively related to hope, and hope was positively related to life satisfaction. The corresponding indirect effect was  $-0.09$ , with a 90% bootstrapped confidence interval ranging from  $-0.19$  to  $-0.01$ . Because this interval does not include zero, the indirect effect of perceived stress on life satisfaction via hope may be considered statistically significant ( $p < .05$ ). The fact that the direct effect of perceived stress

TABLE 1 Results for hierarchical regression with life satisfaction as the dependent variable

Variables	Step 1 (SE)	Step 2 (SE)	Step 3 (SE)	F	R <sup>2</sup>	ΔR <sup>2</sup>
Contextual variables						
Gender (female)	-1.79 (1.16)	-1.73 (1.08)	-2.44* (1.01)	1.16	.10	
Age	0.06 (0.06)	0.01 (0.06)	-0.04 (0.06)			
Level of education (secondary)	-1.76 (1.33)	-1.00 (1.25)	-0.30 (1.14)			
Level of education (higher)	-0.06 (1.16)	0.72 (1.11)	-0.58 (1.04)			
Marital status (married)	1.55 (1.08)	1.61 (1.01)	1.91* (0.91)			
Employment status (in work)	0.58 (1.14)	1.61 (1.06)	0.11 (0.96)			
Religion (practising Catholic)	0.17 (1.07)	-0.06 (0.99)	-0.30 (0.93)			
Relationship to care recipient (spouse)	-3.24 (1.83)	-2.09 (1.72)	-2.09 (1.61)			
Living with care recipient (yes)	-1.09 (1.19)	-1.18 (1.10)	-0.69 (1.05)			
Time as caregiver	-0.12 (0.13)	-0.04 (0.12)	0.03 (0.11)			
Primary stressors						
Independence for activities of daily living		-0.22 (0.48)	-0.69 (0.44)	2.54**	.25**	.15**
Cognitive impairment		1.30* (0.58)	1.48** (0.55)			
Perceived stress		-0.35** (0.09)	-0.25** (0.09)			
Secondary stressors						
Perceived financial difficulties			-1.14** (0.34)	4.22**	.42**	.17**
Restriction of leisure time (yes)			-2.61** (1.00)			
Difficulties at work (yes)			-1.83 (1.02)			

\*\* $p < .01$ ; \* $p < .05$ ;  $p$ -values for regression coefficients are one-tailed tests; regression coefficients are unstandardized. Reference categories are shown in parentheses.



on life satisfaction was not significant ( $B = -0.14$ ;  $p > .05$ ) indicates that perceived stress is only negatively related to life satisfaction when hope (and specifically a lack of hope) intervenes. Note too that the indirect effect of perceived stress on gain via hope was also statistically

**TABLE 2** Correlation coefficients between life satisfaction and character strengths, and with perceived gains of caregiving

Strengths	Life satisfaction
Hope	.42**
Gratitude	.33**
Zest	.33**
Love	.33**
Curiosity	.32**
Forgiveness	.23
Creativity	.22
Judgement	.21
Humility	.21
Appreciation of beauty	.19
Teamwork	.18
Self-regulation	.17
Fairness	.17
Social intelligence	.17
Bravery	.16
Leadership	.16
Honesty	.13
Spirituality	.12
Kindness	.11
Perspective	.11
Humour	.10
Perseverance	.09
Love of learning	.08
Prudence	.05
Perceived gains of caregiving	.29**

\* $p < .05$ ; \*\* $p < .002$  (Bonferroni adjustment).

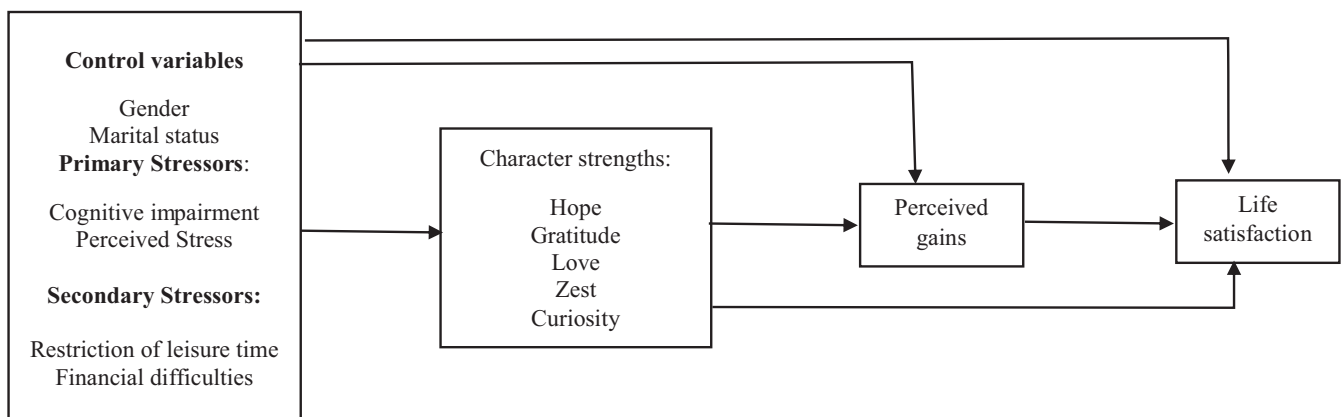
significant. The indirect effect or product of the coefficients involved was  $-0.14$ , with a 90% bootstrapped confidence interval ranging from  $-0.26$  to  $-0.03$ , which again is statistically significant ( $p < .05$ ).

Regarding the other stressors considered, cognitive impairment, perceived financial difficulties and restriction of leisure time had, as we expected, a statistically significant direct effect on life satisfaction. However, contrary to expectations, none of the proposed mediators contributed to explaining their relationship with life satisfaction.

A post hoc power analysis for each regression equation was run for a sample of  $N = 112$  and  $\alpha = .05$ . For the first regression model (regressing contextual variables and stressors on life satisfaction), there were 16 predictors and an effect ( $R^2$ ) of .42. The statistical power reached was .99. Regarding the equations involved in the mediation analysis: (1) for the first mediating paths (stressors  $\rightarrow$  strengths), controlling for contextual variables, there were six predictors and an average effect of .11; (2) for the second mediating paths (strengths  $\rightarrow$  gains), controlling for contextual variables and stressors, there were 11 predictors and an average effect of .38; and (3) for the third mediating paths (gains  $\rightarrow$  life satisfaction), and after controlling for contextual variables, stressors and strengths, there were 12 predictors and an effect of .41. The statistical power reached for these three equations was .78, .99 and .99, respectively. If we focus on individual regression coefficients included in the equations (between 6 and 16), Green's (1991) rule of thumb for a medium sample size suggests required sample sizes between 110 and 120. Finally, for the indirect effects, results showed that when the regression coefficients involved in the mediation were significant, all the indirect effects were also significant. Power analysis for these indirect effects (see Schoemann et al., 2017) resulted in power levels of .95 (for perceived stress  $\rightarrow$  hope  $\rightarrow$  life satisfaction) and .94 (for perceived stress  $\rightarrow$  hope  $\rightarrow$  gain). Together these results suggest that the sample size for all the equations is acceptable.

## 4 | DISCUSSION

The present study aimed to explore the role of character strengths and perceived gains of caregiving as potential mediators in the



**FIGURE 2** Mediation model tested

TABLE 3 Regression equations: strengths on stressors

Variables	Hope	Gratitude	Love	Zest	Curiosity
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Gender (female)	0.11 (0.16)	0.05 (0.13)	0.12 (0.16)	0.05 (0.16)	-0.06 (0.18)
Marital status (married)	0.18 (0.15)	0.23* (0.12)	0.14 (0.14)	0.18 (0.15)	0.09 (0.16)
Cognitive impairment	-0.01 (0.08)	0.07 (0.24)	0.01 (0.08)	0.03 (0.08)	0.03 (0.09)
Perceived stress	-0.05** (0.01)	-0.02* (0.01)	-0.02* (0.01)	-0.04** (0.01)	-0.03* (0.01)
Restriction of leisure time	-0.16 (0.16)	-0.08 (0.12)	-0.33* (0.15)	-0.20 (0.16)	-0.27 (0.17)
Perceived financial difficulties	0.01 (0.05)	-0.06 (0.04)	-0.00 (0.05)	0.01 (0.05)	0.01 (0.06)
	$R^2 = .13^*$	$R^2 = .11^*$	$R^2 = .10$ ( $p = .06$ )	$R^2 = .12^*$	$R^2 = .09$ ( $p = .12$ )

\*\* $p < .01$ ; \* $p < .05$ ;  $p$ -values for regression coefficients are one-tailed tests; regression coefficients are unstandardized. Reference categories are shown in parentheses.

TABLE 4 Regression equations: Gains on stressors and strengths, and life satisfaction on stressors, strengths and gains

Variables	Perceived gains of caregiving	Life satisfaction
	B (SE)	B (SE)
Gender (female)	-1.74 (1.41)	-2.23** (0.94)
Marital status (married)	1.53 (1.29)	0.63 (0.86)
Cognitive impairment	0.24 (0.70)	0.91* (0.46)
Perceived stress	-0.35** (0.13)	-0.14 (0.09)
Restriction of leisure time	1.30 (1.39)	-2.08* (0.93)
Perceived financial difficulties	0.33 (0.45)	-1.03** (0.30)
Hope	2.82** (1.19)	1.96** (0.82)
Gratitude	2.19 (1.48)	-0.11 (0.99)
Love	1.02 (1.13)	0.55 (0.75)
Zest	0.21 (1.19)	-0.12 (0.79)
Curiosity	0.08 (1.00)	0.11 (0.66)
Perceived gains		0.02 (0.07)
	$R^2 = .38^{**}$	$R^2 = .41^{**}$

\*\* $p < .01$ ; \* $p < .05$ ;  $p$ -values for regression coefficients are one-tailed tests; regression coefficients are unstandardized. Reference categories are shown in parentheses.

association between informal caregivers' life satisfaction and both primary stressors (independence for activities of daily living and cognitive impairment in the care recipient, and caregiver's perceived stress) and secondary stressors (perceived financial difficulties, restriction of leisure time and difficulties at work), controlling for contextual variables.

We began by conducting a hierarchical regression to identify the contextual variables, as well as the primary and secondary stressors which were statistically significant in the prediction of life satisfaction. Regarding contextual variables, the results obtained in the final stage of the hierarchical regression showed that female

and unmarried caregivers scored lower on life satisfaction. Other researchers have reported similar findings and have suggested that women's depressive state, subjective health, and life satisfaction are more affected by informal caregiving because they generally spend more time in this role than do men (Wakabayashi & Kureishi, 2018). There is also empirical evidence that caregiving may have a negative impact on the subjective well-being of unmarried caregivers, who may receive less support and thus are more sensitive to stressors from caregiving (Niimi, 2016). Regarding primary and secondary stressors, our results were consistent with what we expected, insofar as a lower level of life satisfaction was related to a higher cognitive impairment in the care recipient, and to more perceived stress, more perceived economic difficulties and restriction of leisure time in caregivers. These findings highlight that the greater the challenges faced by caregivers the poorer their appraisal of life as a whole. These stressors should therefore be assessed and targeted as part of interventions in care services aimed at supporting caregivers so as to build their coping resources.

In the next stage of our study, we conducted a simple correlation analysis with Bonferroni adjustment to identify the strengths most strongly associated with life satisfaction. Our results showed that hope, gratitude, zest, love and curiosity were all positively related to life satisfaction and that the strongest correlation was with hope. This is in line with what we expected and provides further evidence about the importance of these five strengths, which have been consistently associated with life satisfaction in different studies (without caregiver participants) across the lifespan and across cultures (Blanca et al., 2018; Lee et al., 2015; Ovejero et al., 2016; Park & Peterson, 2006a, 2006b; Proyer et al., 2011). Finally, the correlation analysis also showed a positive relationship between perceived gains of caregiving and life satisfaction. This is in line with previous studies which found that lower life satisfaction in caregivers was associated with fewer perceived benefits and gains from their role (Fabà et al., 2017; Fauziana et al., 2018; Haley et al., 2003).

Having identified the significant contextual variables and stressors, we then tested a mediation model in order to identify the



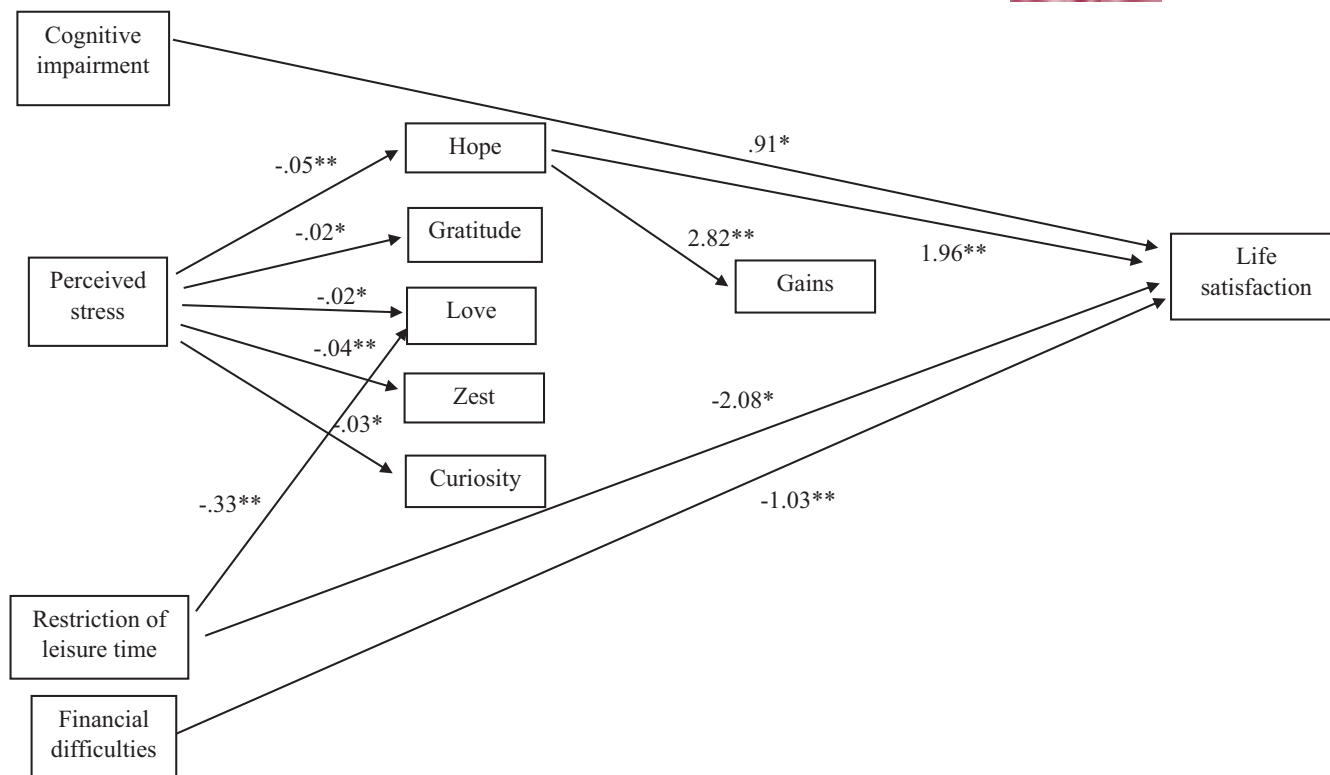


FIGURE 3 Summary of significant paths in the research model

mechanism through which stressors may influence life satisfaction. Gender and marital status were introduced as control variables; perceived stress, cognitive impairment, restriction of leisure time and perceived financial difficulties were considered as stressors; and hope, gratitude, zest, love, curiosity and perceived gains of caregiving were introduced as mediators. Some of the relationships found in the correlational analysis were modified when strengths were introduced into the model, due to the overlap between them. The model verified the direct effect of cognitive impairment, restriction of leisure time and perceived financial difficulties on life satisfaction, but there were no indirect effects for these variables through character strengths or perceived gains. Perceived stress, however, had a significant indirect effect on life satisfaction via hope. None of the other strengths mediated the associations between life satisfaction and stressors. These results suggest that each stressor plays a different role in the prediction of life satisfaction and that there are different pathways through which they affect caregivers' appraisal of their lives. Future research is warranted in order to test other possible mediators such as coping styles or social support.

The mediating role of hope between perceived stress and life satisfaction indicates, as we expected, that higher levels of perceived stress are related to decreased hope, suggesting that this lack of hope maybe one of the pathways through which stress can lead to low life satisfaction. Another interesting result from the mediation model is the significant indirect effect of perceived stress on perceived gains through hope. This finding indicates that a lack of hope is one pathway through which stress may cause not only low life satisfaction but also low perceived gains from caregiving. Perceived

gains did not, however, mediate the relationship between stressors and life satisfaction. This suggests that perceived gain is an outcome variable in the stress process model and that it may be explained by stressors and mediating variables.

The relevance of hope in the caregiving context has been highlighted previously. More specifically, it has recently been reported that hope mediates the association between perceived stress and burden and that hope is the strength most strongly associated with perceived gains (García-Castro et al., 2019, 2020). Hope is conceived as an action-oriented strength and is defined as a positive expectation about the future, such that a person acts in ways that are believed to make desired events more likely (Park et al., 2004; Peterson & Seligman, 2004). Our results here show that a lack of this positive expectation can lead to decreased subjective well-being in caregivers. Overall, this finding provides further support for the positive relationship found across the lifespan in the general population between hope and happiness, life purpose, life satisfaction and well-being (Blanca et al., 2018; Ciarrochi et al., 2015; O'Sullivan, 2011; Ovejero et al., 2016; Proyer et al., 2011). According to hope theory (Snyder, 2000; Snyder et al., 2000), hope has two components: pathway thoughts, referring to the perceived ability to generate possible routes to achieving goals, and agency thoughts, reflecting the motivation to achieve these goals. It is possible that caregivers who experience a lack of hope are less able to generate these two components. Recently, Wang et al. (2020) studied the neurostructural correlates of hope and found that a greater grey matter volume in the left supplementary motor area was robustly linked to higher hope, and, in turn, that

hope mediated the relationship between the greater grey matter volume and subjective well-being. These findings shed light on the neuroanatomical basis of hope.

Our mediation model also revealed a number of other relevant results regarding the role of character strengths. First, perceived stress was negatively and significantly related to the five character strengths included in the model (hope, gratitude, zest, love and curiosity), suggesting that caregivers who endorse these character strengths may be able to deal more effectively with care-related stressors. This finding is expected since the endorsement of strengths as a whole is negatively related to perceived stress (Duan, 2016; Li et al., 2017). Second, there was a negative and significant association between restriction of leisure time and love. Love has been defined as valuing close relationships with others, particularly those in which sharing and caring are reciprocated (Park et al., 2004), and it is considered one of the character strengths most influenced by environmental factors (Steger et al., 2007). Accordingly, our finding could indicate that caregivers who ascribe greater value to their relationships with others may make more effort to set aside time for these relationships as part of their leisure activities.

Although our study provides some important results, there are several limitations that should be considered. First, participants were recruited through day centres for people with Alzheimer's and other dementias, which may restrict the generalizability of the results. Second, the data were obtained using self-report questionnaires. Finally, the use of a cross-sectional design means that longitudinal studies are needed to provide more information about causal associations. Despite these limitations, the study makes an important contribution in that it tests an overall model which includes the relationship between stressors, character strengths and perceived gains of caregiving as mediating variables and life satisfaction as a health outcome, doing so in accordance with the stress process model. As far as we know, this mediating model has not previously been considered. Overall, the findings show that lower life satisfaction in informal caregivers is associated with being female and unmarried, as well as with both primary and secondary stressors, namely greater cognitive impairment in the care recipient and a higher level of perceived stress, restriction of leisure time and perceived financial difficulties. This highlights that the greater the challenges faced by caregivers the poorer their appraisal of life as a whole. We also found that caregivers with lower levels of hope, gratitude, zest, love and curiosity tend to score lower on life satisfaction. However, when these strengths were introduced into the mediation model, hope was the only one that remained significant, mediating the relationship between perceived stress and life satisfaction, as well as that between perceived stress and perceived gains of caregiving. Our results, therefore, identify the mechanism through which stressors may influence life satisfaction and the experience of caregiving, with the lack of hope being one of the pathways through which stress may lead to low life satisfaction and low perceived gains from caregiving.

Overall, the findings of this study have both theoretical and clinical implications. On the one hand, they provide partial support

for the stress process model, identifying hope as a key character strength. In addition, they suggest that interventions in care services aimed at building hope might increase both life satisfaction and the perceived benefits of the caring role among caregivers. Helping caregivers to devise goals and to develop routes for reaching them, while boosting their motivation and confidence in relation to achieving them, could enhance their coping resources, thus consolidating their sense of hope and leading to improved psychological well-being. These results are relevant to gerontological nursing based on the Senses Framework and relationship-centred care (Nolan et al., 2006), insofar as they highlight the importance of the senses of purpose (i.e. having personally valuable goals to aspire to) and achievement (i.e. making progress towards these goals) (Nolan et al., 2006; Ryan et al., 2008; Watson, 2019). Nursing and care staff can play an active role in helping informal caregivers to meet their goals by promoting these two senses, thereby fostering a more positive caregiving experience.

## 5 | RELEVANCE STATEMENT

This paper provides evidence of the impact on the well-being of caring for a person with dementia, as well as the psychological resources that mediate the relationship between well-being and stressors. Although perceived gains of caregiving and character strengths have been proposed as mediating variables, their precise contribution remains unknown. We identified hope as a key character strength, highlighting its mediating role in the relationship between perceived stress and life satisfaction and perceived benefits of caregiving. By promoting a sense of purpose and achievement among informal caregivers, nursing and care staff could help to foster a more positive caring experience.

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## CONFLICT OF INTERESTS

No potential conflict of interest was reported by the authors.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in RIUMA at <https://hdl.handle.net/10630/19653>.

## ORCID

Fernando Javier García-Castro  <https://orcid.org/0000-0003-1851-423X>

Ana Hernández  <https://orcid.org/0000-0002-5237-0535>

María J. Blanca  <https://orcid.org/0000-0003-4046-9308>

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