Psychometric characteristics of the Flourishing Scale-Spanish Version (FS-SV). The factorial structure in two samples: Students and patients with chronic pain

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ABSTRACT

The *Flourishing Scale* was developed by Diener based on recent theories of psychological wellbeing. This article tested some of the psychometric properties of the Spanish version of the Flourishing Scale (FS-SV). Participants were 545 university students (Sample 1) and 111 patients with chronic back pain (Sample 2). Participants completed a battery of instruments to assess flourishing, trait-anxiety, dispositional optimism, dispositional pessimism, and positive and negative affect. In both samples, the results of Principal Axis Factor and Simultaneous Component Analyses showed that the FS-SV scores had a common unidimensional structure. The Omega coefficient showed high reliability for scale scores. The generalizability of the FS-SV structure was analysed using Confirmatory Factor Analysis. Test-retest reliability, criterion validity, and models that included flourishing as a mediator of the associations between personality variables and positive and negative affect were analysed in Sample 1. Results provided support for a single construct in both samples. Flourishing appeared as a mechanism that may account for the association between anxiety, optimism, pessimism, and positive affect. In line with previous studies, these findings extend the concept of flourishing.

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1. Introduction

In general, the concept of wellbeing refers to the subjective appraisals made by individuals concerning the quality of their lives (Ryff & Singer, 2000). However, the scientific literature makes a significant conceptual distinction between subjective wellbeing and psychological wellbeing (Ryan & Deci, 2001). Keyes (Keyes, 2002; Keyes & Grzywacz, 2005) operationalized positive mental health, or flourishing, as a combination of emotional wellbeing, psychological wellbeing, and social wellbeing. Seligman (2011) combined these aspects of wellbeing and proposed a new theory that referred to "flourishing". The term was proposed to describe the desirable state in which both hedonist and eudaemonist components of wellbeing are simultaneously present within an individual (Huppert & So, 2013).

Growing evidence supports the desirable correlates of high levels of wellbeing (Hone, Jarden, Schofield, & Duncan, 2014). According to Seligman (2011), flourishing is a good measure of wellbeing, and the goal of positive psychology should be to increase levels of flourishing. Despite the growing interest in the concept of psychological flourishing, few instruments are available for its assessment (Diener et al., 2010; Hone et al., 2014; Huppert & So, 2013). Diener et al. (2010) provided a psychometric scale to evaluate psychological flourishing called the *Flourishing Scale* (FS). This instrument was developed based on recent theories of human flourishing and of psychological and social wellbeing (Diener et al., 2010; Villieux, Sovet, Jung, & Guilbert, 2016).

The FS measures the core aspects of social-psychological functioning. Most researchers have defined flourishing as a state in which *high levels of subjective* wellbeing and *high levels of social-psychological* wellbeing are achieved (Hone et al., 2014; Seligman, 2011). However, Schotanus-Dijkstra et al. (2016) stated that the FS only measures social-psychological wellbeing, but not subjective wellbeing. The FS has been shown to have acceptable psychometric properties in student samples (Diener et al., 2009; Howell & Buro, 2015; Sumi, 2013), a full-time employee sample (Silva & Caetano, 2011), a community sample (Tang, Duan, Wang, & Liu, 2016), a national representative population sample (Hone, Jarden, & Schofield, 2013), and a sample of patients

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with suboptimal levels of mental wellbeing (Schotanus-Dijkstra et al., 2016).

All these studies found a single factor structure and adequate reliability. The criterion validity of the FS has been analysed using measures of subjective wellbeing (Diener et al., 2009; Hone et al., 2013; Silva & Caetano, 2011; Sumi, 2013). Regarding the relationship between wellbeing and personality traits, several studies have shown that personality is an important precursor of subjective wellbeing. Thus, two meta-analyses (DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008) showed that extraversion and agreeableness were consistently and positively correlated with subjective wellbeing, whereas they were consistently and negatively correlated with neuroticism. In addition, Schmutte and Ryff (1997) found that psychological wellbeing was negatively associated with neuroticism and positively associated with extraversion, agreeableness, and conscientiousness, whereas no significant association was found between psychological wellbeing and openness. Similarly, Lamers, Westerhof, Kovács, and Bohlmeijer (2012) found a low to moderate positive correlation between observed psychological wellbeing and emotional stability (reversed neuroticism), extraversion, agreeableness, conscientiousness, and openness. Several recent studies have analysed the relationship between flourishing (measured using the FS) and personality (Schotanus-Dijkstra et al., 2016; Villieux et al., 2016). The results show low to moderate correlations between the FS score and personality traits.

The aim of the present study was to analyse the psychometric properties of the Spanish version of the Flourishing Scale (FS-SV). The internal structure, factor structure, and internal consistency of the FS-SV were evaluated in two samples: Sample 1, which comprised 545 undergraduate students, and Sample 2, which comprised 111 patients with chronic back pain. As the psychometric properties of the FS-SV have never been tested in a sample of chronic pain patients, we consider that this study could extend our understanding of flourishing and of the scale itself. Regarding criterion validity, we expected to find relationships between several dispositional and hedonic variables. Thus, the validity of the FS-SV was analysed in Sample 1 by examining the association between the FS-SV score and optimism, pessimism, trait-anxiety, positive affect, and negative affect. Finally, the role of flourishing as a mediator between personality and affect was investigated in Sample 1.

2. Method

2.1. Participants

All participants were fully informed of the aim of the study, personal anonymity, and the confidentiality of the survey. Subsequently, their consent was obtained to voluntarily participate in the study.

Sample 1

A consecutive sample of 545 psychology students from the University of Málaga. All participants completed a demographic questionnaire, the FS-SV, the Positive and Negative Affect Schedule (PANAS), the Life Orientation Test Revised (LOT-R), and the trait subscale of the State and Trait Anxiety Inventory (STAI-T). Some of the participants (N = 86) answered the FS-SV twice, approximately 1 month apart, in order to assess test-retest reliability.

The recruitment process was conducted from February 2016 to March 2016. Individuals were considered eligible for inclusion if, at the time of the study, they were able to understand the Spanish language. Women comprised 78.8% of the sample. Average age was 21.18 years (SD = 4.53; range 18–53 years).

Sample 2

A total of 135 patients were invited to take part in the study. Of these, 20 refused participation and 4 did not meet the inclusion criteria. The recruitment process was conducted from September 2015 to June 2016. Individuals were considered eligible for inclusion if they met the following criteria: At the moment of participation in the study they were experiencing pain and had been experiencing pain for at least the last 6 months; they were between 18 and 65 years old; they were not being treated for a malignancy, terminal illness, or psychiatric disorder; they were able to understand the Spanish language; and they were able to understand the instructions and questionnaires. The final sample comprised 111 chronic pain patients (81 women and 30 men) attending four different hospitals. Average age was 50.45 years (SD = 9.42). The participants had musculoskeletal pain at different locations: The most frequent site of pain was the lower back (67.7%), followed by upper shoulder and upper limbs (60.6%), and neck (52.5%). All participants completed the FS-SV.

2.2. Procedure

The FS translation procedure consisted of two steps. Firstly, the English version of the FS was simultaneously translated into Spanish by two translators, who initially worked separately. Subsequently, they collaborated until total agreement was obtained. Secondly, the resulting Spanish version was back-translated by a native-English translator such that it could be compared with the original English version.

Sample 1: three psychologists took part in data collection. They were trained in the application of the protocol to guarantee the standardization of the assessment process. The students were always assessed in their usual classroom. Teachers gave their permission to dedicate 20 min of their lectures to the study.

Sample 2: patients were informed of the study aims, confidentiality was assured, and informed consent was obtained. Each participant had a semi-structured interview with a psychologist to obtain demographic, social, and medical history data. Subsequently, they completed the FS-SV. Three psychologists took part in data collection. They were trained in the application of the protocol to guarantee the standardization of the assessment process. The patients were always assessed in their usual health centre.

2.3. Measures

2.3.1. Flourishing Scale (FS)

The FS (Diener et al., 2010) consists of eight items describing several aspects of human functioning, such as positive relationships, feelings of competence, and having meaning and purpose in life. Each item of the FS is answered on a 1–7 scale that ranges from strong disagreement to strong agreement. All items are phrased in a positive manner. High

Table 1
Criteria for selection of number of factors.

Criterion	Estimate	Sample 1 (n = 545)				Sample 2 (n = 111)			
		Value	Component	Value	Factor	Value	Component	Value	Factor
UI1	λ_1/λ_2	6.25	1	–	–	4.80		–	–
UI2	$\lambda_1 - \lambda_2/\lambda_2 - \lambda_3$	62.67	1	–	–	17.00	1	–	–
Parallel Analysis			1		1		1		1
VSS (Complexity 1)	Maximum	0.91	1	0.90	1	0.90	1	0.98	1
VSS (Complexity 2)	Maximum	0.93	2	0.91	2	0.94	3	0.86	2
Velicer' MAP	Minimum	0.03	1	0.03	1	0.04	1	0.04	1

Note: $\lambda_1, \lambda_2, \lambda_3$ first, second and third Eigen.

Table 2
Factor structure and Item Analysis in Sample 1 (N = 545).

Item	Factor structure		Analysis of items				
	Loading	h^2	M	SD	IH	$\omega(-\text{item})$	$CI\,\omega(-\text{item})$
1. I lead a purposeful and meaningful life.	0.78	0.61	6.05	1.25	0.73	0.86	0.84–0.88
2. My social relationships are supportive and rewarding.	0.65	0.42	6.02	1.09	0.61	0.88	0.86–0.90
3. I am engaged and interested in my daily activities.	0.69	0.47	5.38	1.21	0.64	0.87	0.85–0.90
4. I actively contribute to the happiness and well-being of others.	0.65	0.42	5.70	1.07	0.61	0.88	0.86–0.90
5. I am competent and capable in the activities that are important for me	0.70	0.49	5.96	1.06	0.66	0.87	0.85–0.89
6. I am a good person and live a good life.	0.80	0.64	5.80	1.10	0.75	0.86	0.84–0.88
7. I am optimistic about my future.	0.72	0.51	5.41	1.43	0.67	0.87	0.85–0.90
8. People respect me.	0.61	0.37	5.59	1.08	0.57	0.88	0.86–0.90
Scale	% Var = 49		45.90	6.90		$\omega = 0.89\ CI\,\omega$: 0.87–0.91	

Notes: communality (h^2), mean (M), standard deviation (SD), homogeneity index (IH), 95% confidence interval ($CI\,\omega(-\text{item})$), 95% confidence interval ($CI\,\omega$).

scores mean that respondents view themselves in positive terms in relevant areas of functioning.

2.3.2. Positive and Negative Affect Schedule (PANAS)

Positive and negative affect were assessed using the PANAS (Watson, Clark, & Tellegen, 1988), which is one of the most reliable, valid, and efficient means to measure these aspects. It comprises two 10-item scales. The Spanish version of PANAS (Sandín et al., 1999) also has excellent construct and criterion validity. In this study, Cronbach's alpha reliabilities for positive and negative affect were 0.88 and 0.85, respectively.

2.3.3. Life Orientation Test Revised (LOT-R)

Dispositional optimism was assessed using the Spanish version of the LOT-R (Ferrando, Chico, & Tous, 2002). The LOT-R (Scheier, Carver, & Bridge, 1994) consists of six scored items and four filler items. Respondents indicate the extent to which they agree with each item on a 5-point Likert-type scale ranging from 0 (strongly disagree) to 4 (strongly agree). The total score of the LOT-R was used to reflect the general expectancy of a positive outcome, with higher scores representing higher levels of optimism. The optimism and pessimism subscale scores were calculated by summing the positive and negative items, respectively. In the present study, Cronbach's alpha for the optimism and pessimism subscales were 0.75 and 0.66, respectively.

2.3.4. State and Trait Anxiety Inventory (STAI)

The STAI (Spielberger, Gorsuch, & Lushene, 1970) comprises two 20-item scales that assess anxiety as a trait and anxiety as a state. Only the STAI-Trait subscale was used in this study. The STAI-Trait addresses how respondents "generally feel" (e.g., "I am a steady person"; "I lack self-confidence"). Respondents are asked to rate themselves on each item on a 4-point Likert scale, ranging from almost never to almost always. The Spanish STAI also has excellent construct and criterion validity (Spielberger, Gorsuch, & Lushene, 2008). In the present study, the instrument showed a Cronbach's alpha of 0.91 for the STAI-Trait scale.

2.4. Data analyses

The number of dimensions was calculated using indices based on Parallel Analysis (Horn, 1965), Very Simple Structure (VSS) (Revelle & Rocklin, 1979), Minimum Average Partial Correlation (Velicer's MAP) (Velicer, 1976), and Unidimensionality Indices (UI1 = Eigen 1/Eigen2 > 5 UI2 = Eigen1 – Eigen2 – Eigen3 > 5) (Martínez Arias, 1995). The dimensionality of FS-SV items was calculated using Exploratory Factor Analysis (EFA) and the Principal Axis (PA) method.

The reliability of the items was assessed using the Omega coefficient (ω), Homogeneity Indices (HI), and 'ω if each item is deleted'. We also obtained 95% Confidence Intervals for ω and ω (−item).

These analyses were conducted using different functions included in the R environment (R Development Core Team, 2017) of the psych (Revelle, 2017) and MBESS (Kelley & Lai, 2017) packages.

The Simultaneous Component Analysis (SCA) program (Kiers, 1990) was used to investigate whether a common factor structure could be simultaneously assumed in Sample 1 and Sample 2.

Confirmatory factor analysis was performed on the two samples via Structural Equation Modelling using the LISREL 8.30 software package (Jöreskog & Sörbom, 1993). Analyses were performed on the polychoric correlation matrix of the FS-SV items using the Maximum Likelihood Robust estimation method. Several goodness-of-fit indexes for the model were applied. The Satorra-Bentler chi-square is a chi-square fit index that corrects the statistic under distributional violations (Bentler, 2006). The Comparative Fit Index (CFI) (Bentler, 1990) and the Non-normed Fit Index (NNFI) (Bentler & Bonnet, 1980) measure the proportional improvement in fit by comparing a hypothesized model with a more restricted baseline model. The root mean-square error of approximation (RMSEA) is an absolute misfit index. Values <0.08 indicate an adequate fit and values <0.06 indicate a good fit (Hu & Bentler, 1999).

Test-retest reliability and criterion validity were analysed using Pearson correlation coefficients.

The procedure described by Preacher and Hayes (2008) was applied to investigate the role of flourishing as a mediator between personality antecedent variables (trait-anxiety, dispositional optimism, and

Table 3
Factor structure and Item Analysis in Sample 2 (N = 111).

Item	Factor structure		Analysis of items				
	Loading	h^2	M	SD	IH	$\omega(-\text{item})$	$CI\,\omega(-\text{item})$
1. I lead a purposeful and meaningful life.	0.79	0.62	4.88	1.60	0.74	0.87	0.81–0.91
2. My social relationships are supportive and rewarding.	0.77	0.59	4.59	1.79	0.73	0.87	0.82–0.91
3. I am engaged and interested in my daily activities.	0.85	0.72	4.73	1.62	0.78	0.87	0.78–0.91
4. I actively contribute to the happiness and well-being of others.	0.61	0.37	5.33	1.39	0.56	0.89	0.83–0.92
5. I am competent and capable in the activities that are important for me	0.76	0.58	4.97	1.47	0.71	0.86	0.81–0.92
6. I am a good person and live a good life.	0.67	0.45	5.20	1.34	0.63	0.88	0.82–0.92
7. I am optimistic about my future.	0.75	0.56	4.62	1.78	0.69	0.88	0.82–0.92
8. People respect me.	0.42	0.18	6.04	1.48	0.40	0.90	0.85–0.93
Scale	% Var = 51		40.36	9.35		$\omega = 0.89\ CI\,\omega$: 0.84–0.93	

Notes: communality (h^2), mean (M), standard deviation (SD), homogeneity index (IH), 95% confidence interval ($CI\,\omega(-\text{item})$), 95% confidence interval ($CI\,\omega$).

dispositional pessimism) and affect (positive and negative). The mean direct and indirect effects and their confidence intervals (CIs) were calculated using the estimates based on 1000 bootstrap samples.

Criterion validity, test-retest reliability, and mediation analysis were analysed only in Sample 1 using the Statistical Package for the Social Sciences (SPSS) version 22.0.

3. Results

3.1. One-factor structure in Sample 1 and Sample 2

The VSS (Complexity 1) index and Velicer's MAP criteria suggested that both samples had a one-factor or one-component solution (see Table 1, columns 3–10). According to UI1 or UI2, all items satisfied unidimensionality (Sample 1: $UI1 = 6.25 > 5$ or $UI2 = 62.67 > 5$; Sample 2: $UI2 = 17.00 > 5$).

The dimensionality of the questionnaire item scores was calculated using EFA-PA in both samples. The results are shown in Tables 2 and 3.

Sample 1. The one-factor solution accounted for 49% of the variance; all loadings were >0.60, and most communalities were >0.40 except for item 8 whose communality was 0.37. The Kaiser-Meyer-Olking (KMO) index was 0.92 and the subject-to-item ratio was 68:1, indicating that the use of EFA was appropriate for this sample.

Sample 2. The one-factor solution accounted for 51% of the variance; all loadings were >0.60, except for item 8 whose loading was 0.42. Most communalities were >0.40 except for items 4 and 8 whose communalities were 0.37 and 0.18, respectively. The Kaiser-Meyer-Olking (KMO) index was 0.85 and the subject-to-item ratio was 14:1, indicating that the use of EFA was also appropriate for Sample 2.

3.2. Reliability

Sample 1. Homogeneity indices were >0.56. The Omega coefficient was 0.89 (95% CI 0.87–0.90) and did not increase upon the deletion of any item (see Table 2).

Sample 2. Homogeneity indices were greater than or equal to 0.56 except for item 8 (0.40). The Omega coefficient was 0.89 (95% CI 0.84–0.93) and did not increase upon the deletion of any item, except for item 8 (0.90) (see Table 3).

In summary, the FS-SV scores showed a common unidimensional structure with high reliability in both samples.

Except for item 8, the means of the scores of each item were higher in Sample 1 than in Sample 2. There was more variability in all the items in Sample 2 than in Sample 1.

Similarly, the FS-SV scale mean was higher in Sample 1 than in Sample 2, and the SD scale was greater in Sample 2 than in Sample 1 (see Tables 2 and 3). The range of scale scores were similar (14–56 in Sample 1 and 11–56 in Sample 2).

A significant difference was found between students and patients in the two Flourishing score means. The Levene F-test showed heteroscedasticity (F (1, 654) = 14.78, p < 0.001) and t (136) = 5.91, p < 0.001. The effect size of mean differences was moderate (d = 0.68).

3.3. Common structure in Sample 1 and Sample 2

Simultaneous Component Analysis was used to investigate whether a common structure could be simultaneously assumed in Sample 1 and Sample 2. It has been suggested that if the variance accounted for by SCA is considerably lower than the variance accounted for by Principal Component Analysis (PCA) then the search for a common structure for the two samples should be seriously questioned (Kiers, 1990). This was not the case in the present study. The percentages of variance accounted for were 55.55 (PCA) in Sample 1 and 56.41 (PCA) in Sample 2. The common structure accounted for 55.98% and 55.96% of the total variance under PCA and SCA, respectively. Table 4 shows the loadings for the factor structures obtained with SCA in both samples.

Table 4
Common factor structure of in the Sample 1 and Sample 2.

Item	SCA-Sample 1 Loading	SCA-Sample 2 Loading
1	0.81	0.82
2	0.71	0.80
3	0.74	0.85
4	0.70	0.67
5	0.75	0.79
6	0.82	0.73
7	0.76	0.78
8	0.66	0.50
	% Common Var (SCA) = 55.96	

Note: SCA: Simultaneous Component Analysis.

3.4. Confirmatory factor analysis in Sample 1 and Sample 2

We assessed the generalization of the one-factor structure obtained in this study and that obtained by Diener et al. (2010). Thus, a one-factor model was estimated in which all the items were specified to a single factor in each sample.

Table 5 includes the CFA parameters and all the goodness-of-fit indexes of the tested models. As shown in Table 5, the one-factor model had a good fit in Sample 2 although not in Sample 1. Therefore, the FS-SV one-factor structure was generalizable to the patient population but not to the student population.

3.5. Test-retest reliability in Sample 1

The correlation coefficient for the association between the FS-SV total score at Time-1 (M = 45.90, SD = 6.9, range 14–56) and at Time-2 (M = 45.23, SD = 7.3, range 10–56) was high (r = 0.73).

3.6. Criterion validity in Sample 1

Table 6 shows the descriptive statistics and correlations between all the variables measured in Sample 1.

Criterion validity was assessed by calculating Pearson correlations between the FS-SV score, the PANAS score (N = 544), the LOT-R total score (N = 545), the pessimism score (N = 544), and the STAI-T score (N = 537) (i.e. anxiety, conceptualized as a personality trait). Correlations were assessed following the guidelines proposed by Cohen

Table 5
Parameters of confirmatory factor analysis. One-factor solution.

Items	Sample 1 N = 545	Sample 2 N = 111
1. I lead a purposeful and meaningful life.	0.82	0.83
2. My social relationships are supportive and rewarding.	0.66	0.82
3. I am engaged and interested in my daily activities.	0.69	0.87
4. I actively contribute to the happiness and well-being of others.	0.65	0.69
5. I am competent and capable in the activities that are important for me.	0.72	0.82
6. I am a good person and live a good life.	0.84	0.73
7. I am optimistic about my future.	0.74	0.80
8. People respect me.	0.65	0.42
Goodness-of-fit indexes of the tested models		
χ^2(df)	62.72(20), p < 0.001	21.86(20), p = 0.35
CFI	0.99	0.99
NNFI	0.99	0.99
RMSEA	0.063	0.029

All items are reproduced from Diener et al. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. Social Indicators Research, 97, 143–156.

Spanish version of the items is upon request.

Table 6
Descriptive statistics and correlations among measures.

	Sample 1								
	M	SD	Range	1	2	3	4	5	6
1. Flourishing	45.90	6.9	14–56	1					
2. Optimism	7.47	2.4	0–12	0.57**	1				
				545					
3. Pessimism	4.91	2.4	0–12	−0.42**	−0.88**	1			
				544	544				
4. Anxiety-trait	23.18	10.7	3–56	−0.63**	−0.69**	0.59**	1		
				537	537	536			
5. Negative affect	21.67	6.6	10–50	−0.44**	−0.50**	0.44**	0.71**	1	
				544	544	543	537		
6. Positive affect	34.07	7.0	13–50	0.67**	0.61**	−0.47**	−0.64**	−0.28**	1
				543	543	542	536	543	

Notes: means (M), standard deviations (SD), minimum and maximum scores (range); Pearson's correlations, number of participants (N).
** $p < 0.001$.

(1988). As shown in Table 6, the FS-SV scores had a significantly high positive correlation with the optimism total score and with positive affect, a moderate negative association with the pessimism subscale and with negative affect, and a significantly high negative association with anxiety-trait.

3.7. Mediation analysis in Sample 1

Table 7 summarizes the results of the Multiple Mediator Analysis, and shows the path coefficients and confidence intervals for each effect tested in the model. The results showed that flourishing had a significant indirect mediating effect in all cases except between trait-anxiety and negative affect (i.e., the association between trait-anxiety and negative affect was direct). Taken together, the results showed that greater optimism was significantly associated with higher levels of flourishing, which in turn predicted higher levels of positive affect and lower levels of negative affect. In addition, greater pessimism and trait-anxiety was significantly associated with lower levels of flourishing, which in turn predicted lower levels of positive affect and, in the case of pessimism, higher levels of negative affect.

4. Discussion

The aim of this study was to examine the factor structure of the FS-SV and to provide empirical evidence regarding its psychometric qualities. Factor analyses confirmed the unidimensionality of the FS-SV. These results are in line with those described in the original study (Diener et al., 2010) and with those observed in other cultural/national samples (Hone et al., 2014; Silva & Caetano, 2011; Sumi, 2013; Villieux et al., 2016). As Diener stated, a priority for future research would be to analyse the degree to which the FS differs and converges across cultures and groups. In this study, the unidimensionality of the FS-SV was investigated not only in a sample of the general population (students), but also in a sample of patients with chronic pain.

Gilmour (2015) is the only researcher to have analysed the role of flourishing mental health in a sample of chronic pain patients, although this author employed a multi-dimensional measure of flourishing mental health as defined by the Mental Health Continuum Short Form (MHC-SF) (Keyes, 2002). Testing the psychometric properties of the FS-SV in a sample of chronic pain patients could extend our understanding of flourishing and of the scale itself.

In the present study, students had a higher mean flourishing score than chronic pain patients. The mean score of the student sample on the FS-SV was relatively similar to the mean score of college students in other Western countries (Diener et al., 2010; Hone et al., 2014; Silva & Caetano, 2011), but was higher than the scores of Japanese college students ($M = 36.63$) (Sumi, 2013). In fact, the mean score of the sample of patients ($M = 40.3$) was higher than the scores of Japanese students. This result highlights the relevance of analysing the degree to which the FS differs and converges across cultures and groups.

The relationships between the FS-SV total score and several dispositional and hedonic variables were analysed in the sample of students. Seligman (2006) and Scheier et al. (Scheier, Carver, & Bridges, 2001) found that optimism was relevant to successful functioning and wellbeing. Correlation analyses showed a strong positive correlation between the FS-SV and optimism and a moderate negative correlation between the FS-SV and pessimism. Dispositional optimism has been considered to be personal trait defined as the tendency to believe that one will generally experience good versus bad outcomes in life (Scheier et al., 1994). In this sense, and as may have been expected, dispositional optimism had a positive association with high levels of flourishing. This result is in line with the results of the original study (Diener et al., 2010) and supports the validity of the FS-SV.

A negative association was found between trait-anxiety and flourishing. As Eysenck (1990), anxiety is one the main factors in the neuroticism trait. The empirical literature suggests that there is a high negative association between neuroticism and wellbeing (DeNeve & Cooper, 1998; Steel et al., 2008; Villieux et al., 2016). To the best of our knowledge, no studies have investigated the associations between trait-anxiety and psychological flourishing. However, the results obtained by Villieux et al. (2016) on neuroticism and flourishing could be

Table 7
Path coefficients and confidence intervals of mediational analyses in Sample 1.

Independent variable (IV)	Mediating variable (M)	Dependent variable (DV)	Effect of IV on M	Effect of M on DV	Direct effect	Indirect effect	95% CI for indirect effect	Total effect
Optimism	Flourishing	PA	1.68**	0.48**	0.93**	0.81**	0.66 to 0.95	1.74**
		NA	1.68**	−0.26**	−0.80**	−0.43**	−0.61 to −0.27	−1.24**
Pessimism		PA	−1.21**	0.57**	−0.66**	−0.69**	−0.84 to −0.55	−1.35**
		NA	−1.21**	−0.30**	0.82**	0.37**	0.24 to 0.52	1.19**
Anxiety		PA	−0.41**	0.45**	−0.24**	−0.18**	−0.22 to −0.14	−0.42**
		NA	−0.41**	0.01	0.45**	0.00	−0.04 to 0.03	0.44**

Note: estimated using bias corrected and accelerated bootstrapping, with 1.000 samples. CI = confidence interval. PA = positive affect; NA = negative affect.
** $p < 0.001$.

partially supported by the results of the present study. The results on dispositional optimism, trait-anxiety, and flourishing suggest that personality traits may directly affect psychological flourishing. In addition, flourishing had a positive association with positive affect and a negative one with negative affect. This result is in line with previous studies on flourishing (Diener et al., 2010; Villieux et al., 2016) and supports the hypothesis that flourishing is associated with subjective wellbeing.

Finally, the results showed that flourishing mediated optimism/pessimism and affect as well as anxiety and positive affect, although flourishing did not mediate trait-anxiety and negative affect. Further studies could confirm the role of flourishing in mediating personality and subjective wellbeing. Such research could have relevant implications for psychological clinical interventions to improve subjective wellbeing through the modification of levels of flourishing.

In conclusion, the results suggest that the FS-SV has adequate stability, reliability, and criterion validity. Thus, from the eudaimonic perspective, the FS-SV appears to be a reliable tool for measuring the core aspects of wellbeing. The findings of this study contribute to research on wellbeing and may be useful in developing interventions for the enhancement of wellbeing and the reduction of distress.

However, this study has some methodological limitations. It did not seek to fully analyse the psychometric properties of the FS-SV, and thus further research is needed to provide more information, including normative data (Hone et al., 2014). Reliability and factor structure were studied in both samples, but validity was only studied in the student sample. Thus, the psychometric properties of the instrument should be further analysed in different populations (e.g., chronic pain patients).

Disclosure statement

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Informed consent

All the procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national) and with the 1975 Declaration of Helsinki (revised 2000).

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Acknowledgements

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