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The Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version

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Abstract

Social support plays a crucial role in the quality of life of people with chronic pain. The Informal Social Support for Autonomy and Dependence in Pain Inventory assesses two functions of received social support: the promotion of autonomy and the promotion of dependence. The aim of this cross-sectional study was to adapt this instrument for its use in the Spanish population. The sample comprised 256 individuals with chronic pain. Participants were recruited through two local associations of people with fibromyalgia, a physiotherapy unit and a hospital pain unit. The data were collected in Spain between October 2018 and January 2020. The structure of the questionnaire was analysed using confirmatory factor analysis, average variance extracted, composite reliability and internal consistency indexes, and inter-correlations between the scales. The criterion-related validity of the instrument was analysed by investigating its relationship with pain intensity, positive and negative affect, daily functioning, activity impairment, wellbeing and satisfaction with life. The structure with the best fit had four related factors: emotional social support for the promotion of autonomy; instrumental social support for the promotion of autonomy; emotional social support for the promotion of dependence and instrumental social support for the promotion of dependence. The scales showed adequate internal consistency. An association was found between higher levels of instrumental social support for the promotion of dependence and higher levels of pain-related disability and decreased daily functioning. An association was also found between the promotion of autonomy and increased satisfaction with life. The Spanish version of the inventory shows appropriate psychometric properties. In the setting of disability prevention, this instrument is useful in assessing the support relationships between people with chronic pain and their relatives.

KEYWORDS

activities of daily living, chronic pain, emotional adjustment, functional autonomy, psychometric properties, social support, validation study

1 | INTRODUCTION

A recent update of the definition of pain includes the social components of the experience (Williams & Craig, 2016). Previous theoretical models have emphasised the role of the social environment in the pain experience (Craig, 2015; Hadjistavropoulos et al., 2011). There is increasing research on the social modulation of pain, with special attention on the role of social support (Bernardes et al., 2017; Campbell et al., 2011; Che, Cash, Chung, et al., 2018; Che, Cash, Ng, et al., 2018; Solé et al., 2020). People can receive support through formal and informal networks, and although the availability of supportive relationships is important (Wills & Ainette, 2012), the perception of being loved, valued and accepted is more relevant to health outcomes (Taylor, 2011; Uchino, 2009). Evidence on the beneficial effects of received informal social support – i.e. self-reports on past supportive interactions with significant others – on chronic pain adaptation outcomes is inconsistent (Campbell et al., 2011; Hoogendoorn et al., 2000; Leonard et al., 2006). Although previous findings have shown an association between higher received social support and better outcomes (e.g. Asano et al., 2008; Kennedy et al., 1995; Miró et al., 2009; Osborne et al., 2007; Williams et al., 2004); other studies have demonstrated an association between social support, mainly solicitous responses and poorer outcomes (e.g. Giardino et al., 2003; Stroud et al., 2006). Solicitous responses entail paying attention to pain behaviour, giving assistance, and assuming the chores of the individual with chronic pain (Newton-John, 2002). Furthermore, one study found that solicitous responses to pain made the people with chronic pain feel guilty, useless and a burden (Newton-John & de C Williams, 2006). A comprehensive review has shown that contradictory results can arise, among other reasons, from the lack of a precise definition of pain-related social support, as most studies either focus on general social support processes or on pain-specific solicitousness (Bernardes et al., 2017). To move this issue forward, Matos and Bernardes (2013) proposed that, in the field of chronic pain, two new functions of pain-related social support should be distinguished: (1) the Perceived Promotion of Autonomy (PPA), which has been defined as "(…) perceptions of actions of support that either provide tangible help (instrumental function) and/or reinforce self-esteem/confidence (emotional/esteem support) to keep on going despite pain" (p. 596), understood as supportive actions that promote functional autonomy (i.e. the ability to perform daily living activities without assistance) (Pinsonnault et al., 2003); and (2) Perceived Promotion of Dependence (PPD), which is understood as the perception of instrumental and/or emotional supportive actions that promote functional dependence (i.e. the need for help to carry out daily activities). Their proposal was based on the view that the impact of social support on chronic pain adjustment depends on whether supportive interactions promote or hinder the functional autonomy of individuals (Matos & Bernardes, 2013). This view was based on two underlying assumptions: (1) avoidance behavior is a major risk factor for pain-related disability, as predicted by the Fear-avoidance Model (Leeuw et al., 2007; Vlaeyen & Linton, 2012) and the diathesis-stress models (Turk, 2002); and (2) by promoting functional autonomy or dependence, social support interactions may influence the extent to which individuals engage in activity avoidance versus engagement (Matos & Bernardes, 2013; Matos et al., 2015).

What is known about this topic

- Evidence on the beneficial effects of informal social support on chronic pain adaptation outcomes is contradictory. These results can arise from neglecting to delimit the functions relevant to pain-related social support.
- Two new functions of pain-related social support have been distinguished: the promotion of autonomy and the promotion of dependence.
- The Informal Social Support for Autonomy and Dependence in Pain Inventory (ISSADI) was designed to assess these functions and is only available in Portuguese.

What this paper adds

- An innovative instrument validated for its use in the Spanish population that includes the assessment of two functions of pain-related social support: the promotion of functional autonomy and the promotion functional of dependence.
- A tool with good psychometric properties.
- Empirical evidence of the relevance of two functions of social support (i.e. the promotion of functional autonomy and dependence), given their consistent associations with pain-related disability.

To assess these two new functions of pain-related support—PPA and PPD—in formal care contexts (e.g. day care centres and nursing homes), Matos and Bernardes (2013) developed the Formal Social Support for Autonomy and Dependence in Pain Inventory (FSSADI-PAIN) (Matos & Bernardes, 2013; Matos et al., 2015), which has been demonstrated to be a valid and reliable instrument. Since the time of that study, research on these two functions of pain-related social support has meaningfully contributed to understanding the dynamics of formal supportive interactions with older adults with chronic pain. A cross-sectional study showed associations between higher PPA and lower pain-related disability, higher PPD and higher pain-related disability, and that both associations were partially mediated by older adults' self-reported physical functioning (Matos et al., 2016). A prospective study also showed that higher PPD at baseline predicted an increase in pain-related disability 3 months afterwards, which was explained by decreases in self-reported physical functioning and pain-related self-efficacy, especially among older adults with short to moderate pain duration and low to moderate pain intensity (Matos, Bernandes, Goubert, 2017). Moreover, higher PPA buffered the detrimental impact of pain severity (at baseline) on older adults' pain disability 3 months afterwards by increasing

their pain-related self-efficacy (Matos, Bernandes, Goubert, Beyers, 2017). Overall, the findings suggest that these two functions of pain-related social support play different roles in chronic pain adaptation processes.

Within the same theoretical framework, Domingues and Bernardes (2014) developed a similar instrument, the Informal Social Support for Autonomy and Dependence in Pain Inventory (ISSADI-PAIN), to assess pain-related social support for functional autonomy and dependence in an informal context (i.e. the family). The preliminary validation study of the instrument found a factorial structure with four inter-correlated factors: emotional social support for the promotion of functional autonomy (PPA – emot), instrumental social support for the promotion of functional autonomy (PPA – instr), emotional social support for the promotion of functional dependence (PPD – emot) and instrumental social support for the promotion of functional dependence (PPD – instr). The resultant scales showed good to high internal consistency (0.72–0.85) as well as adequate convergent and discriminant validity using the Medical Outcomes Study Social Support Survey (Sherbourne & Stewart, 1991). A recent unpublished study that confirmed the factorial structure of the ISSADI-PAIN showed that the structure with the best fit comprised three factors: PPD, PPA – instr and PPA – emot (Bernardes et al., in prep.). These findings suggest that the ISSADI-PAIN is a promising novel tool to assess two particularly relevant functions of pain-related informal social support.

The ISSADI-PAIN is not yet adapted into Spanish. Given the relevance of informal social support in the wellbeing of people with chronic pain (Bernardes et al., 2017), the main aim of this study was to validate the Spanish version of the ISSADI-PAIN (ISSADI-PAIN-SV) and test its construct and criterion-related validity. We expected that the internal structure of the ISSADI-PAIN-SV would conform to one of the three factorial structures found in previous studies:

1. Two-related factors, each concerning the two functions of perceived social support (PPA and PPD) identified by Matos and Bernardes (2013).
2. Three-related factors: PPD, PPA – instr and PPA – emot (Bernardes et al., in prep.).
3. Four-related factors: PPD – instr, PPD – emot, PPA – instr and PPA – emot (Domingues & Bernardes, 2014).

We investigated associations between each scale of the ISSADI-PAIN-SV and the scales of the Spanish version of the Medical Outcomes Study Social Support Survey (MOS-SSS-SV), which is a consolidated measure of social support (Revilla Ahumada et al., 2005). We expected that the magnitude of the correlations between the instrumental scales of the ISADDI-PAIN-SV and the MOS-SSS-SV and between the emotional scales of both questionnaires would be higher than the association between the emotional and the instrumental scales.

The criteria-related validity of the ISSADI-PAIN-SV was analysed by investigating its relationship with pain intensity, positive and negative affect, daily functioning, activity impairment, wellbeing and satisfaction with life. Overall, we expected higher PPA to be related to lower pain intensity, negative affect, and activity impairment and to higher positive affect, daily functioning, wellbeing, and satisfaction with life. Conversely, we expected higher PPD to be related to lower positive affect, daily functioning, wellbeing, and satisfaction with life and to higher pain intensity, negative affect, and activity impairment.

2 | METHODS

2.1 | Participants

The study included 256 individuals with chronic pain. We selected all the participants according to the following inclusion criteria: at the moment of participation in the study they were experiencing pain and had been experiencing pain for at least the last 3 months; they were over 18 years old; they were not being treated for a malignancy, terminal illness or psychiatric disorder; they were able to understand Spanish (spoken and written) and they were able to understand the instructions and questionnaires.

2.2 | Measures

2.2.1 | The Spanish version of the Informal Social Support for Autonomy and Dependence in Pain Inventory (ISSADI-PAIN-SV)

This instrument is an 11-item self-report measure. Participants were asked to rate how often their family members provided them with support for functional autonomy or dependence when they were in pain on a Likert scale ranging from (1) not at all frequent to (5) extremely frequent (Appendix S1). As in the original version, the scores for each scale are calculated by computing the average of their respective items. Higher scores indicate that participants perceive higher support for functional autonomy or dependence. The original ISSADI-PAIN showed adequate internal consistency and criteria and convergent validity (Domingues & Bernardes, 2014).

2.2.2 | Spanish version of the Medical Outcomes Study Social Support Survey (MOS-SSS-SV)

The MOS-SSS-SV is a self-report instrument comprising 20 items which are answered on a 1- to 5-point scale (Revilla Ahumada et al., 2005). The Spanish version comprises three scales (Revilla Ahumada et al., 2005): 'emotional/informational support', which address the expression of affection and empathic understanding and the provision of guidance and advice, respectively; 'affective support', addressing actual demonstrations of love; and 'instrumental support', addressing the provision of tangible or

material help. The MOS-SSS-SV has shown adequate test-retest reliability (0.78) and internal consistency. In this study, the internal consistency of the scales was high (emotional/informational support, $\alpha = 0.94$; affective support, $\alpha = 0.87$; instrumental support, $\alpha = 0.82$).

2.2.3 | Composite pain index

We used this instrument to ask participants to rate their mildest, average and worst pain during the past 2 weeks, as well as their current pain on a Likert scale where 0 is 'No pain' and 10 is 'The worst pain possible'. A composite pain intensity score was calculated for each participant by calculating the mean of the mildest, average, worst and current pain (Jensen & Karoly, 2011). In this study, this index showed adequate internal consistency ($\alpha = 0.84$).

2.2.4 | Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) comprises two 10-item scales. The Spanish version (Sandín et al., 1999) has excellent construct and criterion validity. In this study, Cronbach's α reliabilities for positive and negative affect were 0.86 and 0.78, respectively.

2.2.5 | Impairment and Functioning Inventory

The Impairment and Functioning Inventory (IFI-R; Ramírez-Maestre & Esteve, 2015) comprises 30 items each referring to a specific activity associated with one of the following areas: household, autonomous behaviour, leisure and social relationships. Individuals are asked if they performed each activity during the previous week. If they did not perform the activity, they are asked if they practiced this activity before pain onset. The instrument provides an index of daily functioning and an index of activity impairment. Both subscales showed good internal consistency and good levels of convergent and criterion validity (Ramírez-Maestre & Esteve, 2015). In this study, the global scales were internally consistent (daily functioning, $\alpha = 0.83$; impairment, $\alpha = 0.92$).

2.2.6 | World Health Organization Wellbeing Index (WHO-5)

The five-item WHO-5 is a short generic global rating scale that measures subjective wellbeing (Heun et al., 1999). Respondents rate the extent to which they agree with a set of statements regarding the frequency of their feelings during the previous 2 weeks on a six-point Likert scale. The Spanish version shows good internal consistency reliability and good convergent validity (Lucas-Carrasco, 2012). In this study, the WHO-5 had a Cronbach's α of 0.82.

2.2.7 | Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS) is a five-item scale where respondents are asked to express their agreement with an overall judgement of their life on a 7-point Likert scale (Diener et al., 1985). The Spanish adaptation of the instrument showed good internal consistency, a unidimensional structure and satisfactory convergent validity (Pons et al., 2000). In this study, Cronbach's α reliability was 0.82.

2.3 | Procedures

The ISSADI was translated into Spanish using a forward-backward translation method (Hambleton & Patsula, 1999). The translation procedure consisted of two steps. Firstly, the Portuguese version of the ISSADI was simultaneously translated into Spanish by three translators, who initially worked separately. Subsequently, they collaborated until a full consensus was obtained. Secondly, the resulting Spanish version was back-translated by a native-Portuguese speaker such that it could be compared with the original Portuguese version. This back-translated version was compared with the original instrument by the translator and three of the authors. Differences were discussed and resolved by joint agreement, until a final version was obtained. The translated version was sent to one of the original authors in order to confirm item equivalence. The ISSADI-SV was applied to six people with chronic pain. No major changes were made after the pilot study.

The participants were recruited through two local associations of people with fibromyalgia, a physiotherapy unit and the Pain Unit of the Hospital Costa del Sol (Málaga, Spain). In the medical settings, the doctors briefly explained the aims of the study to the participants who fulfilled the inclusion criteria and invited them to take part in the study. The psychologists made appointments by telephone with the individuals who consented to participate and assessments took place in the medical facilities which they regularly attended. In the setting of the associations, the presidents encouraged participation in the study and sent the psychologists the contact details of the associates who were interested in collaborating in the study. Potential participants made appointments by telephone and assessments took place in the facilities of the associations.

Two trained psychologists assessed the participants. Firstly, they checked that they fulfilled the inclusion criteria. Secondly, the participants were fully informed of the study aims, their participation was requested, they signed an informed consent form and confidentiality was assured. Thirdly, each participant had a semi-structured interview to obtain demographic, social and medical history data. Finally, they completed the battery of questionnaires previously described. The approximate length of each session was 45 min. We collected the data between October 2018 and January 2020. During the first months of data collection, we applied all the aforementioned measures to 116 participants. However, this study formed part of a general project, which included the administration

of other questionnaires. In order to comply with the schedule of the general project, we had to apply fewer measures to the participants. Therefore, we decided to apply only the ISSADI-PAIN-SV and the MOS-SSS-SV to complete the construct validity study sample. Thus, 256 people with chronic pain participated in the construct validity study and 116 participated in the criteria-related validity study.

The project was conducted in accordance with the Declaration of Helsinki and received ethical clearance by the Institutional Ethics Review Board (Reference: CEUMA 66–2019-H).

2.4 | Statistical analyses

To investigate the internal structure of the ISSADI-PAIN-SV, a confirmatory factor analysis was performed via Structural Equation Modeling using the LISREL 8.80 software package (Jöreskog & Sörbom, 1993). Analyses were performed on the covariance matrix of the ISSADI-PAIN-SV items using the Maximum Likelihood and the Robust estimation method. The following goodness-of-fit-indexes were used: the Satorra-Bentler chi-square (Bentler, 1990), the Comparative Fit Index (CFI) (Bentler, 2005), the Non-normed Fit Index (NNFI) (Bentler & Bonnet, 1980), the root mean-square error of approximation (RMSEA) and the Akaike Information Criterion (AIC) Akaike, 1987). Satorra-Bentler chi-square is a chi-square fit index that corrects the statistic under distributional violations. To reduce the sensitivity of chi-square to sample size, the index is divided by the degrees of freedom (Bentler, 2005). Ratios of 2 or 1 are indicative of an acceptable fit of the model (Kline, 2016). The CFI and NNFI measure the proportional improvement in fit by comparing a hypothesised model with the null model as baseline model. The CFI and NNFI range from 0 (absolute lack of fit) to 1 (perfect fit) and values >0.90 indicate a good fit (Hu & Bentler, 1998, 1999). The RMSEA is an absolute misfit index: the closer to zero, the better the fit. Values <0.08 indicate an adequate fit and values <0.06 indicate a good fit (Hu & Bentler, 1998). Finally, the AIC index (Akaike, 1987) compares alternative models taking into account parsimony as well as fit. In this approach, the models are ranked according to their AIC values and the model with the smallest value is chosen. We estimated the convergent validity of the measurement model using the magnitude of the factor loadings, the average variance extracted (AVE) and the Composite Reliability (CR) indexes. Convergent validity is considered to be acceptable when all the item loadings in a measurement model are statistically significant, the AVE ≥ 0.50, and the CR ≥ 0.70 (Fornell & Larcker, 1981; Hair et al., 2010). The sample size in this study ($N = 256$) is considered sufficient for a confirmatory factor analysis according to several criteria: (1) a minimum sample size of 100 or 200 (Boomsma, 1982, 1985); (2) 5 or 10 observations per estimated parameter (Bentler & Chou, 1987; Bollen, 1989) and (3) 10 cases per variable (Nunnally, 1994).

All other analyses were conducted using SPSS (Windows version 25.0). Descriptive statistics were calculated for the demographic, clinical and other variables. To analyse the internal consistency of the ISSADI-PAIN-SV, Cronbach´s α, McDonald's Omega and the corrected item-factor correlations were calculated as well as the inter-correlations between the scales. Correlations were assessed in line with Cohen's (1988) guidelines: low correlations range from 0.10 to 0.29, moderate correlations from 0.30 to 0.49, and high correlations from 0.50 to 1. We analysed the correlations between the four scales of the ISSADI-PAIN-SV and the scales of a consolidated measure of social support, the MOS-SSS-SV (Revilla Ahumada et al., 2005). We used Steiger's *z* test (Diedenhofen & Musch, 2015) to compare the magnitude of the correlation between ISSADI-PAIN-SV and MOS-SSS-SV.

3 | FINDINGS

3.1 | Description of the participants

Construct validity was tested in a sample of 256 individuals with chronic pain (55.90% females and 44.10% male). The average age was 56.49 years ($SD = 9.71$). At the time of the study, 46.40% were married or cohabiting and 35.10% were single. Regarding their work status, 46.90% were retired, 16.90% were active workers and 11.30% were unemployed. A total of 48.60% had completed primary education and 19.90% had completed high-school education. Average self-reported pain intensity was 6.96 ($SD = 1.67$) and average pain duration was 13.52 years ($SD = 10.57$). Fifty-six percent had chronic primary pain syndromes (fibromyalgia and nonspecific low-back pain). Musculoskeletal pain was the most frequent chronic secondary pain syndrome (35.70%).

Criteria-related validity was tested in a subsample of 116 people with chronic musculoskeletal pain (75.90% females and 24.10% male). The average age was 53.19 years ($SD = 8.56$). At the time of the study, 64.70% were married or cohabiting. Regarding their work status, 36.80% were unemployed, 36% were active workers, 15.80% were retired and 11.40% were homemakers. A total of 38.80% had completed high-school education and 37.90% had completed primary education. Median pain duration was 9.25 years ($SD = 9.15$) and average self-reported pain intensity was 6.93 ($SD = 1.69$). All the participants had musculoskeletal pain: 17.58% had primary syndromes and the others had secondary syndromes.

3.2 | Construct validity

Confirmatory factor analysis was conducted to test the three models. Table 1 shows all the (Goodness-of-fit Indexes) GFIs of these models: the 2- and 3-related factors models failed to meet the recommended cut-off criteria, whereas the fit of the 4-related factors model was excellent. The AIC index showed that the 4-related factor model had the smallest value, and consequently, the best fit. Figure 1 shows the factor loadings of this model, all of which were significant ($p < 0.05$). To avoid clutter, inter-correlations between the scales are presented in a separate table (Table 3). Table 2 shows that the convergent validity of the measurement model was supported

TABLE 1 Confirmatory factor analysis of the ISSADI-PAIN-SV: goodness-of-fit indexes ($N = 256$)

Alternative factor structures	χ^2/df	NNFI	CFI	RMSEA	AIC
Two related factors	8.91	0.86	0.89	0.18	429.06
Three related factors	3.97	0.95	0.96	0.11	212.72
Four related factors	1.70	0.99	0.99	0.05	120.78

Note: χ^2/df: Satorra-Bentler chi-square divided by degrees of freedom. Abbreviations: AIC, Akaike Information Criterion; CFI, comparative fit index; ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version; NNFI, non-normed fit index; RMSEA, root mean-square error of approximation.

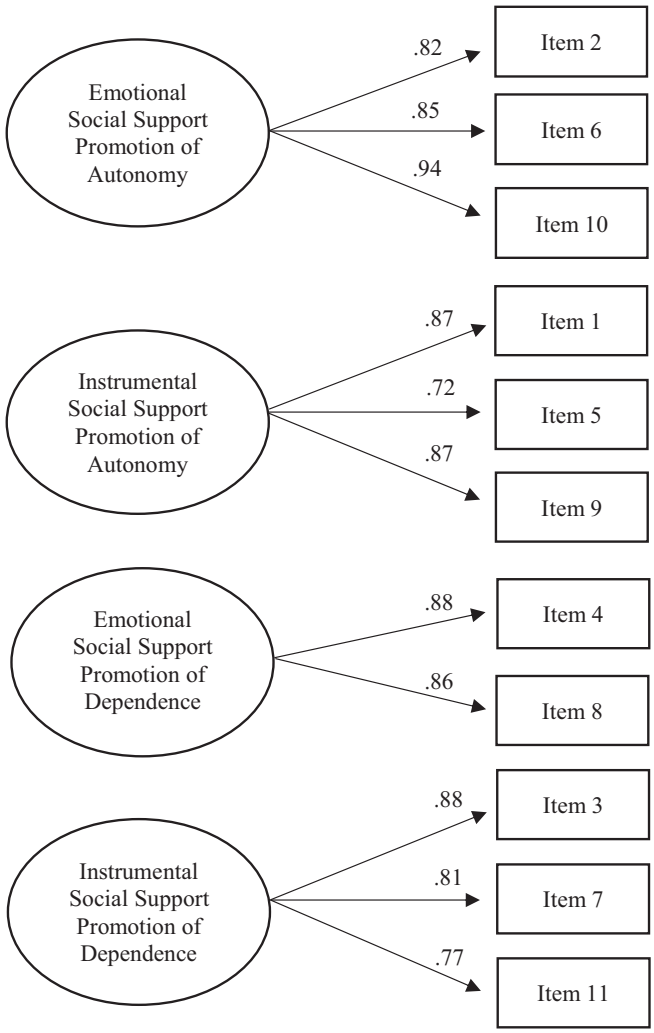

FIGURE 1 Confirmatory factor analysis of the ISSADI-PAIN-SV; four related factors solution. Decimal numbers positioned near arrows represent factor loadings on each scale. ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version

by the AVE and CR scores, all of which were higher than 0.50 and 0.70, respectively.

As shown in Table 2, all the corrected item-factor correlations were appropriate and the scales showed good internal consistency indices.

Table 3 shows the inter-correlations between the ISSADI-PAIN-SV scales. A positive association was found between all the scales, and a very high correlation was found between the PPD – instr and PPA – instr scales. A low correlation was found between the PPD – emot and PPA – emot scales. Inter-correlations between the other scales were moderate (0.38–0.45).

We analysed the associations between the four scales of the ISSADI-PAIN-SV and the scales of the MOS-SSS-SV (Revilla Ahumada et al., 2005) and their magnitude was compared (Table 4). The magnitude of the correlations between the instrumental social support scales of both instruments was higher than the magnitude of their correlations with the emotional scales (Table 5). However, contrary to expectations, the magnitude of the correlations between the emotional and affective social support scales of both instruments was similar to their correlation with the instrumental scales.

Correlational analyses and comparisons of means were performed to explore the relationship between the ISSADI-PAIN-SV scales and several demographic and clinical variables. No significant associations or differences were found regarding education, work status or self-reported pain intensity. Student's t test showed that PPA – emot [$t_{(254)} = -2.343$, $p = 0.020$] ($M_{male} = 3.26$, $SD = 1.13$; $M_{females} = 3.63$, $SD = 1.38$) and PPD – instr [$t_{(254)} = -2.162$, $p = 0.033$] ($M_{male} = 2.53$, $SD = 1.27$; $M_{females} = 2.89$, $SD = 1.35$) were higher among women than among men. Analysis of variance showed that PPA – emot [$F_{(3,244)} = 4.348$, $p = 0.005$] ($M_{single} = 3.15$, $SD = 1.17$; $M_{married} = 3.69$, $SD = 1.31$) was higher among married people than among singles. Higher PPD – instr was reported by participants with musculoskeletal pain than by individuals with primary pain syndromes [$F_{(2,253)} = 3.895$, $p = 0.02$] ($M_{musculoskeltal} = 2.97$, $SD = 1.32$; $M_{primary} = 2.51$, $SD = 1.31$). Significant low correlations were found between PPA – instr and age ($r = 0.21$, $p = 0.001$) and between PPD – emot and months in pain ($r = 0.12$, $p = 0.05$).

3.3 | Criteria-related validity

As expected, a moderate positive correlation was found between PPA – emot and satisfaction with life; however, PPA – emot was not significantly related to the other criteria (Table 6). Contrary to expectations, PPA – instr had a low negative correlation with daily functioning, low positive correlations with pain intensity and activity impairment and, as expected, a moderate positive correlation with satisfaction with life. PPD – emot only showed a small positive correlation with activity impairment in the expected direction. In line with the hypothesis, PPD – instr showed a moderate positive correlation with activity impairment and a moderate negative correlation with daily functioning, but contrary to expectations, a small positive correlation with satisfaction with life.

TABLE 2 Means (*M*), standard deviations (*SD*), corrected item-factor correlations, Cronbach's alpha coefficients (α), McDonald's omega (Ω), the average variance extracted (AVE), and the composite reliability coefficient (CR) of the Items of the ISSADI-PAIN-SV ($N = 256$)

Factors/Items	*M*	*SD*	Corrected item-factor correlations	α	Ω	AVE	CR
Factor I: PPA – Emot				0.84	0.85	0.76	0.90
2. Motivate me to exercise	3.52	1.46	0.68				
6. Encourage me to visit other family members or friends	3.34	1.49	0.69				
10. Encourage me to participate in leisure and fun activities	3.53	1.47	0.77				
Factor II: PPA – Instr				0.79	0.80	0.68	0.86
1. Give me a lift or help me arrange transportation so that I can handle my personal affairs autonomously	3.12	1.63	0.69				
5. Assist me in contacting entities (e.g. bank, social security) so that I can solve my personal problems autonomously	2.77	1.70	0.56				
9. Help me to take care of practical aspects (e.g. transportation) so that I can participate in activities/social outings	3.09	1.63	0.67				
Factor III: PPD – Emot				0.78	[a]	0.74	0.85
4. Encourage me to avoid any kind of activities	2.78	1.62	0.64				
8. Advise me to stop everything I am doing	3.17	1.51	0.64				
Factor IV: PPD – Instr				0.80	0.81	0.67	0.86
3. Take care of my household chores	2.74	1.52	0.71				
7. Make my meals for me so that I do not need to cook	2.64	1.57	0.65				
11. Do my shopping so that I do not need to leave the house	2.80	1.59	0.58				

Abbreviations: Emot, emotional; Instr, instrumental; PPA, perceived promotion of autonomy; PPD, perceived promotion of dependence.
[a]Omega requires at least two items to be computed.

TABLE 3 Inter-correlations between the ISSADI-PAIN-SV scales ($N = 256$)

	PPA – Emot	PPA – Instr	PPD – Emot	PPD – Instr
PPA – Emot	1	0.42***	0.38***	0.27***
PPA – Instr		1	0.45***	0.55***
PPD – Emot			1	0.40***
PPD – Instr				1

Abbreviations: Emot, emotional; Instr, instrumental; ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version; PPA, perceived promotion of autonomy; PPD, perceived promotion of dependence.
***$p < 0.001$.

4 | DISCUSSION

The main aim of this study was to adapt and validate the Spanish version of the ISSADI-PAIN. A sample of 256 individuals with chronic pain participated in the construct validity study and a subsample of 116 individuals participated in the criteria-related validity study. Most of the participants had primary pain syndromes or secondary musculoskeletal pain and had been experiencing high levels of pain (an average of almost 7 points out of 10) over a long period (an average of 13 years).

Regarding the internal structure of the ISSADI-PAIN-SV, the results showed that the best fit was obtained with the 4-related factors model: emotional social support for the promotion of autonomy; instrumental social support for the promotion of autonomy; emotional social support for the promotion of dependence and instrumental social support for the promotion of dependence. These results are fully in line with the preliminary validation study of the instrument (Domingues & Bernardes, 2014); however, they only partially replicate the most recent confirmatory factor analysis of the original version of the measure (Bernardes et al., in prep.). Although the structure of the PPA – related subscales is the same in both studies, this recent confirmatory factor analysis of the original version of the measure (Bernardes et al., in prep.) showed that PPD was a unique factor encompassing both instrumental and emotional support actions. This difference could be accounted for by the characteristics of the study samples, because this study only included people with long-lasting chronic pain (9–13 years), whereas the aforementioned study also included individuals with

TABLE 4 Correlations between the ISSADI-SV and MOS-SSS-SV scales

ISSADI-SV scales	MOS-SSS-SV Scales		
	Emotional/informational support	Affective support	Instrumental support
PPA – Emot	0.41***	0.34***	0.32***
PPA – Instr	0.27***	0.25***	0.52***
PPD – Emot	0.20**	0.21**	0.27***
PPD – Instr	0.20**	0.17**	0.55***

Abbreviations: Emot, emotional; Instr, instrumental; ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version; MOS-SSS-SV, Medical Outcomes Study Social Support Survey Spanish version; PPA, perceived promotion of autonomy; PPD, perceived promotion of dependence.

**$p < 0.01$; ***$p < 0.001$.

TABLE 5 Comparisons of the magnitude of the correlations between the ISSADI_PAIN-SV and MOS-SSS-SV scales

Pairs of correlations compared		*z*	*p*
ISSADI-SV PPA – Emot with MOS-SSS-SV emotional/informational social support			
ISSADI-SV PPA – Emot with MOS-SSS-SV affective social support	0.41 vs. 0.34	1.616	0.1060
ISSADI-SV PPA – Emot with MOS-SSS-SV emotional/informational social support	0.41 vs. 0.32	1.696	0.0527
ISSADI-SV PPA – Emot s with MOS-SSS-SV instrumental social support			
ISSADI-SV PPA – Emot with MOS-SSS-SV affective social support	0.34 vs. 0.32	0.318	0.3752
ISSADI-SV PPA – Emot with MOS-SSS-SV instrumental social support			
ISSADI-SV PPA – Instr with MOS-SSS-SV emotional/informational social support	0.27 vs. 0.25	0.557	0.5776
ISSADI-SV PPA – Instr with MOS-SSS-SV affective social support			
ISSADI-SV PPA – Instr with MOS-SSS-SV emotional/informational social support	0.27 vs. 0.52	−4.517	0.0000
ISSADI-SV PPA – Instr with MOS-SSS-SV instrumental social support			
ISSADI-SV PPA – Instr with MOS-SSS-SV affective social support	0.25 vs. 0.52	−4.573	0.0000
ISSADI-SV PPA – Instr with MOS-SSS-SV instrumental social support			
ISSADI-SV PPD – Emot with MOS-SSS-SV emotional/informational social support	0.20 vs. 0.21	−0.105	0.9161
ISSADI-SV PPD – Emot with MOS-SSS-SV affective social support			
ISSADI-SV PPD – Emot with MOS-SSS-SV emotional/informational social support	0.20 vs. 0.27	1.134	0.8717
ISSADI-SV PPD – Emot with MOS-SSS-SV instrumental social support			
ISSADI-SV PPD – Emot with MOS-SSS-SV affective social support	0.21 vs. 0.27	−0.967	0.8332
ISSADI-SV PPD – Emot with MOS-SSS-SV instrumental social support			
ISSADI-SV PPD – Instr with MOS-SSS-SV emotional/informational social support	0.20 vs. 0.17	0.587	0.5569
ISSADI-SV PPD – Inst with MOS-SSS-SV affective social support			
ISSADI-SV PPD – Instr with MOS-SSS-SV emotional/informational social support	0.20 vs. 0.55	−6.313	0.0000
ISSADI-SV PPD – Instr with MOS-SSS-SV instrumental social support			
ISSADI-SV PPD – Instr with MOS-SSS-SV affective social support	0.17 vs. 0.55	−6.250	0.0000
ISSADI-SV PPD – Instr with MOS-SSS-SV instrumental social support			

Note: Steiger's *z* test ($N = 256$).

Abbreviations: Emot, emotional; Instr, instrumental; ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version; MOS-SSS-SV, Medical Outcomes Study Social Support Survey Spanish version; PPA, perceived promotion of autonomy; PPD, perceived promotion of dependence.

acute pain (Bernardes et al., in prep.). Nonetheless, the studies on the ISSADI_PAIN suggest that, contrary to the 2-factor structure found in formal contexts, people have a more differentiated view of family support for functional autonomy/dependence by distinguishing between its instrumental and emotional functions (Domingues & Bernardes, 2014). This could be explained by the relevance of the affective sphere in relationships with relatives (Domingues & Bernardes, 2014). Several studies have highlighted the importance of distinguishing between different dimensions of the concept and the measurement of social support, showing that

TABLE 6 Correlations between the ISSADI-PAIN-SV scales and pain intensity, positive affect, negative affect, daily functioning, and activity impairment ($N = 116$)

ISSADI_PAIN-SV scales	Pain intensity	Positive affect	Negative affect	Daily functioning	Activity impairment	Wellbeing	Satisfaction with life
PPA – Emot	0.06	0.11	−0.08	0.10	0.02	0.10	0.34***
PPA – Instr	0.19*	−0.04	0.02	−0.19*	0.26**	−0.07	0.29**
PPD – Emot	0.07	−0.01	0.07	−0.10	0.22*	−0.09	0.06
PPD – Instr	0.01	0.11	−0.03	−0.38***	0.36**	0.16	0.22*

Abbreviations: Emot, emotional; Instr, instrumental; ISSADI-PAIN-SV, Informal Social Support for Autonomy and Dependence in Pain Inventory Spanish version; PPA, perceived promotion of autonomy; PPD, perceived promotion of dependence.

*$p < 0.05$; **$p < 0.01$; ***$p < .001$.

different dimensions of social support may influence health outcomes through different pathways (Cohen et al., 2000; Schwarzer & Knoll, 2007; Thoits, 2011; Uchino et al., 2012).

The analysis of the ISSADI-PAIN-SV subscale inter-correlations provides interesting clues for understanding the complexities of pain-related social support interactions. Most of the subscales showed positive moderate correlations, which is understandable considering that all of them assess pain-related received social support (i.e. self-reports of pain-related social support received in the past) (Bernardes et al., 2017). It also shows that PPA and PPD are complementary supportive behaviours rather than opposite behaviours. The PPD – instr and PPA – emot subscales had the lowest correlation, which makes sense because these subscales do not share any type of supportive functions. This low correlation suggests that relatives who encourage their close ones with chronic pain to exercise and participate in leisure and social activities will be less likely to substitute for them in the performance of daily activities. The high correlation between the PPD – instr and PPA – instr subscales is somewhat surprising, although it might be explained by the fact that both imply tangible (hence more salient) actions of support. Indeed, what differentiates them is the goal of such tangible help: assuming entire responsibility for the patient's chores (i.e. PPD – instr) and providing protective behaviours (e.g., "give a lift", "help to take care") to promote functional autonomy (i.e. PPA – instr). The correlations with the MOS-SSS-SV showed that, as expected, the instrumental scales of both instruments were positive and highly related. However, contrary to expectations, the magnitude of the correlations between the emotional and affective social support scales of both instruments was similar to their correlation with the instrumental scales. Detailed examination of the content of the items showed that the Affective scale of the MOS-SSS-SV included demonstrations of love and affection, sharing fun and active listening that were not present in the emotional scales of the ISSADI, which mainly refer to 'encouraging', 'advising' or 'motivating'. Overall, these findings support the instrument's construct validity.

Regarding the ISSADI's criterion validity, both the PPD – Inst and PPA – Inst showed the same pattern of associations with daily activity outcomes (lower levels of functioning and higher levels of activity impairment), although the magnitude of the correlations were moderate in the case of PPD – Inst and low for the PPA – Inst. These results reinforce the aforementioned idea that both scales are highly related because they include tangible social support behaviours, despite their different goals. Interestingly, when the goal was the promotion of functional dependence, the activity of people with chronic pain was more severely hindered. Indeed, PPD – Emot also showed a positive low correlation with activity impairment. These results support those obtained in formal contexts, in which significant associations have been found between PPD and higher levels of disability (Matos et al., 2016, 2017). However, in such contexts, social support for the promotion of autonomy was associated with lower pain-related disability (Matos et al., 2016).

The two PPA subscales (instrumental and emotional) showed moderate correlations with satisfaction with life, suggesting that when people with chronic pain are encouraged to perform daily activities by themselves and are helped to do so, they evaluate their lives more positively. The absence of associations between the ISSADI-PAIN-SV and measures of positive affect, negative affect and wellbeing are noteworthy. The explanation may be because the ISSADI-PAIN-SV focusses on assessing supportive interactions that mainly address the individuals' with chronic pain functional activity instead of supportive interactions that directly address emotional regulation issues (e.g. pain-related validation responses). Future developments in the measurement of pain-related social support interactions could further broaden their focus by including supportive actions specifically aimed at the emotional sphere (Bernardes et al., 2017). In summary, many of the expected associations with the criteria were not found and some associations were unexpected, which highlights the complexity of pain-related social support interactions between people with chronic pain and their families.

These results highlight that the adjustment of people with chronic pain partly depends on the dynamics of pain-specific social interactions with their close relatives and that interventions aimed at fostering wellbeing and preventing disability should analyse and modify such interactions when needed. Interventions aimed at pain adjustment traditionally include components aimed at promoting more effective communication skills (Abbasi et al., 2012; Keefe et al., 1996, 1999); however, conclusions about the effectiveness of interventions directed at promoting social support are limited, among other factors, by the need for more precise instruments to assess social support that

would enable matching people to interventions (Hogan et al., 2002). The ISSADI-PAIN responds to this need.

The results of the current study are limited in some ways. Firstly, the size of the sample in Study 2 was relatively small and women were overrepresented, which may have biased the findings. Secondly, only self-report measures were used and the results may be biased due to shared method variance; future studies should diversify the assessment instruments by including, for example, objective measures of functional autonomy. Thirdly, there is a lack of findings on the temporal stability and predictive validity of the ISSADI-PAIN-SV; thus, these aspects should be investigated in future prospective studies. Despite these limitations, the present study not only validated the ISSADI-PAIN-SV for the Spanish population, but also provided much needed and relevant information on its criterion-related validity using a homogeneous clinical sample. This study also contributes to developing a novel measure of key specific pain-related functions of social support that may in the future be integrated in the assessment of social dynamics surrounding people with chronic pain.

5 | CONCLUSION

The ISSADI-SV is an innovative, valid and reliable instrument that includes specific functions of social support that are especially relevant in the context of chronic pain because of its consistent association with pain-related disability. It is now available for its use in Spanish-speaking populations.

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CONFLICT OF INTEREST

No conflict of interest exist.

AUTHOR CONTRIBUTIONS

All the authors have made substantial contributions and have read and approved this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on: https://data.mendeley.com/datasets. Code availability: http://dx.doi.org/10.17632/hg77f2d6dm.1.

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SUPPORTING INFORMATION

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