Psychometric properties of the Spanish version of the 12-item Interpersonal Needs Questionnaire in fibromyalgia syndrome patients

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Título: Propiedades psicométricas de la versión en español del Cuestionario de Necesidades Interpersonales de 12 ítems en pacientes con síndrome de fibromialgia.
Resumen: Según la teoría interpersonal del suicidio, la pertenencia frustrada y la carga percibida son elementos clave en el desarrollo de la ideación suicida. El Cuestionario de necesidades interpersonales (INQ) fue diseñado para evaluar el grado de frustración de estas dos necesidades interpersonales relacionadas con la ideación suicida. El objetivo de este estudio fue analizar las propiedades psicométricas de una adaptación al español del INQ-12 en pacientes con fibromialgia. Un análisis factorial exploratorio (*n* = 180) y un análisis factorial confirmatorio (*n* = 179) fueron realizados en dos submuestras seleccionadas al azar. El primer análisis llevó a la eliminación de dos ítems, mientras que el segundo confirmó el ajuste de la estructura propuesta de dos factores. La fiabilidad estimada mediante el coeficiente alfa de Cronbach y el coeficiente Spearman-Brown fue adecuada. Para obtener evidencias de validez basadas en la relación con otras variables, se utilizaron tres variables relacionadas con el suicidio. Además, se utilizó un grupo control *(n* = 99) para contrastar los promedios de las puntuaciones INQ como evidencia de validez basada en puntajes diferenciales. Estos hallazgos respaldan la utilidad de la versión española del INQ-10 para evaluar el grado de frustración de estas necesidades interpersonales en pacientes con fibromialgia.
Palabras clave: Ideación suicida; dolor crónico; fibromialgia; necesidades interpersonales; propiedades psicométricas.

Abstract: According to the interpersonal theory of suicide, thwarted belongingness and perceived burdensomeness are key elements in the development of suicidal ideation. The Interpersonal Needs Questionnaire (INQ) was developed to assess the degree of frustration of these two interpersonal needs related to suicidal ideation. This study aims to analyze the psychometrics properties of a Spanish adaptation of INQ-12 in fibromyalgia patients. Exploratory factor analysis (*n* = 180) and confirmatory factor analysis *(n* = 179) were performed in two randomly selected subsamples. The first analysis leads to the elimination of two items, whereas the second one confirmed the fit of the proposed two-factor structure. The reliability estimated using the Cronbach´s alpha coefficient and the Spearman-Brown coefficient was adequate. To obtain further validity evidence based on the relationship with other variables three variables were used. Moreover, a control group (*n* = 99) was used to contrast the means of INQ scores as evidence of validity based on differential scores. These findings support the usefulness of the Spanish version of the INQ-10 for assessing the degree of frustration of these interpersonal needs in patients with fibromyalgia.
Keywords: Suicidal ideation; chronic pain; fibromyalgia syndrome; interpersonal needs; psychometrics properties**.**

Introduction

Suicidal behaviors are manifested in ideation, thoughts, verbalizations, or behaviors related to the desire to end own life, and may differ according to the organization of the event, degree of intentionality and results thereof (Silverman, Berma, Sanddal, O'Carrol, & Joiner, 2007). The last fatal consequence that could result because of a suicidal behavior is self-inflicted death or suicide. Suicide is a global health problem that concerns a million annual deaths worldwide, and an estimated continuous growing in the next decades (World Health Organization, 2006).

Meanwhile, suicidal ideation (SI) is the most common form of suicidal behavior, being more common than suicide attempts (Hawton & van Heeringen, 2009) and up to 10 times more frequent than completed suicide (Nock et al., 2008). The SI is characterized by persistent thoughts, plans or desires to commit suicide, maintained for at least two consecutive weeks, having even identified the resources available to carry it out (Mingote, Jiménez-Arriero, Osorio-Suárez, & Palomo, 2004), and is very often a precursor of

later and more serious suicidal behaviors (Konick & Gutiérrez, 2005).

Many risk factors of SI have been identified, including comorbidity with mental disorders (Nock et al., 2008), somatic diseases (Fang et al., 2008), having had previous suicide attempts (Zonda, 2006), social isolation (Wyder, Ward, & De Leo, 2009), unemployment (Yim et al., 2004), or family conflicts (Bastia & Kar, 2009). Suffering of chronic pain has been also associated with an increased risk of suicidal behavior in general (Braden & Sullivan, 2008; Fishbain, Bruns, Disorbio, & Lewis, 2009; Ratcliffe, Enns, Belik, & Sareen, 2008; Scott et al, 2010), including the SI.

Despite the limited literature on this regard, several studies have explored the characteristics of chronic pain patients associated with SI and consistently found that either the severity and the duration of pain are directly associated to higher ratios of SI (Cho, Hwang, & Lee, 2013; Smith, Edwards, Robinson, & Dworkin, 2004). Besides, many studies have reported high levels of anxiety and depression in chronic pain patients, which are directly associated with the onset of SI (Calandre et al., 2015; Triñanes, González-Villar, Gómez-Perretta, & Carrillo-de-la-Peña, 2014).

A pathological condition distinguishable by its chronic pain is fibromyalgia syndrome (FMS). FMS is a chronic syndrome characterized by generalized pain, fatigue, sleep disturbance, morning stiffness, depression, and hypersensitivity

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to physical and psychological stimuli (Calandre et al., 2015). This pathological condition could expose many fibromyalgia patients to several risk factors for suicide. Few studies have shed light on the relationship between FMS and suicidal behavior. Ilgen et al. (2013) found a statistically significant association between the common pain condition among patients with fibromyalgia and suicide mortality. A study by Triñanes et al. (2014) estimated the prevalence of SI among fibromyalgia patients in 32.5%. Another study (Jimenez-Rodriguez et al., 2014) highlighted a higher probability of presenting SI and greater suicidal risk among fibromyalgia patients than low back pain patients, a pathology also characterized by chronic pain. These studies emphasized the prevalence of suicidal behavior and the relationship between clinical symptoms of fibromyalgia syndrome and suicidal behavior, but little attention has been given to specific risk factors that may be central in the development and process of SI and behavior in these patients.

In order to provide the keys for a better understanding of the phenomenon of suicidal behavior, Joiner (2005) proposed the interpersonal theory of suicide. This theory emphasizes the existence of two interpersonal constructs related to the development of the SI: thwarted belongingness, referring to the unmet need of feeling socially integrated, and perceived burdensomeness, referring to perception of being a burden for oneself. The SI (planning, desiring, and persistent thoughts) emerges from the simultaneous presence of high degree of thwarted belongingness and perceived burdensomeness and the sense of despair or perception that these will not change (hopelessness). A systematic review (Ma, Batterham, Calear, & Han, 2017) studied the findings of 58 studies on the two frustrated interpersonal needs involved in SI according to the interpersonal suicide theory. In this review, a strong association was found between perceived burdensomeness and the desire to commit suicide. This association is modest between thwarted belongingness and SI. This approach could provide relevant information on how interpersonal needs mediate between the clinical symptoms of those affected by FMS and SI.

Several measurement instruments have been developed over the last 40 years for predicting constructs related to suicidal behaviors (ninth item on the Beck Depression Inventory-II [Beck, Steer, & Brown, 1996], The Beck Hopelessness Scale [Beck, Weissman, Lester, & Trexler, 1974], 25-item Adult Suicidal Ideation Questionnaire [Reynolds, 1991]) or measures of the risk of people engaging in suicidal behavior (Modified Scale For Suicide Ideation [Miller, Norman, Bishop, & Down, 1986], Plutchik Suicide Risk Scale [Plutchik, van Praag, Conte, & Picard, 1989]). All these instruments are based on traditional constructs and models that emphasize suicide as a unique phenomenon. The interpersonal theory of suicide (Joiner, 2005) was a pioneer in contemplating the ideation and action of suicidal behavior as two distinct processes (Klonsky, Saffer, & Bryan, 2017): 1) SI, and 2) suicide attempt and consummate suicide. Later, other theories (three-step theory [Klonsky & May, 2015], integrated motiva-

tional-volitional model [O'Connor, 2011], fluid vulnerability theory [Rudd, 2006]) have been developed in consonance with the interpersonal theory of suicide. These theories have generated significant progress in understanding suicidal behavior and therapeutic approach prevention. For all this, it is important to note the importance of obtaining a measurement instrument for the degree of frustration of the basic interpersonal needs involved in the development and process of SI.

The Interpersonal Needs Questionnaire (INQ; Van Orden, Witte, Gordon, Bender, & Joiner, 2008) was designed as an essential tool for measuring these constructs predictors of the desire to commit suicide according to the interpersonal suicide theory (Joiner, 2005). The INQ is a self-administered test consisting of two subscales: the perception of being a burden, and the sense of thwarted belongingness. The original version contained 25 items (Van Orden, 2009), and subsequently various shorter versions have been proposed (Bryan, Hernandez, Allison, & Clemans, 2013; Hill et al., 2015) being the 15-item and 12-item versions, respectively, the most used in clinical research. The INQ-12 (Van Orden et al., 2008) was proposed in order to gain precision and reduce multicollinearity between constructs, and it has proven to be a useful tool for predicting the SI in general population. Freedenthal, Lamis, Osman, Khalo, & Gutiérrez (2011) examined the psychometric properties of INQ-12, supporting the existence of the two factors raised by the interpersonal theory of suicide: the perception of being a burden and the sense of thwarted belongingness. Additionally, the authors obtained validity evidence related to other constructs through moderate correlations with instruments used to measure both risk as protective factors for suicidal behaviors.

Both the original and the shorter versions of INQ were proposed in English. A single study (Garza & Pettit, 2010) used a brief version of 9-item INQ in Spanish for measuring a single factor, the perception of being a burden. The authors reported adequate internal consistency ($\alpha = .79$), although smaller than the original version taken as reference (Van Orden et al., 2008), which probably was due to an improper semantic equivalence and the characteristics of the sample used. This point supports the need for a version of INQ in Spanish with adequate psychometric properties.

This study aims to analyze the psychometric properties of a Spanish adaptation of INQ-12 in a sample of fibromyalgia syndrome patients, a disease condition characterized by chronic pain. The psychometric properties of Spanish version of INQ were tested applying an exploratory factorial analysis (EFA) to test the internal structure, and performing a confirmatory factorial analysis (CFA) to confirm this structure. Afterwards, an estimation of reliability of both subscales that comprise the questionnaire was performed and evidence of validity based on differential scores and based on the relationship with other variables of interest were obtained.

Taking in account the background described above, the

hypotheses of the present study are: 1) the Spanish adaptation of the INQ will have an adequate internal structure in line with the theory on which it is based, 2) a good reliability will be obtained for the subscales that compose the INQ, 3) there will be statistically significant differences between the group of patients with fibromyalgia and a control group and 4) the relationship between the INQ subscales and the other variables (the 9th item of BDI-II, the total score of BDI-II, and the Plutchik Suicide Risk Scale) would be high and positive for all of them.

Method

Participants

Participants were 359 FMS patients recruited by incidental sampling through associations from various provinces of Spain, aged between 22 and 76 years ($M = 49.71$; $SD = 9.55$). As FMS predominantly affects women, the majority of participants (95.8%) were women, and 4.2% of them were men. Inclusion criteria were to be of legal age, meet diagnostic criteria for FMS (Wolfe et al., 1990, 2010) and accept voluntary participation in the study. Exclusion criteria were to suffer a severe organic damage and/or mental disease included on Axis I of DMS-IV with the exception of major depression because it is considered as a potential clinical manifestation of FMS itself.

A control group was performed by accidental sampling for obtaining evidence of validity based on differential scores. Control group consisted of 99 healthy participants aged between 24 and 78 years ($M = 49.77$; $SD = 12.57$). The majority of the sample (93.9%) were women, and 6.1% were men. Exclusion criteria were to suffer a severe organic damage and/or mental disease included on Axis I of DMS-IV.

Procedure

At the initial stage, the INQ was translated through a back-translation process following the guide proposed by Muñiz, Elosua, & Hambleton (2013) and the International Testing Guidelines on Adapting a Test (Humbleton, Merenda, & Spielberger, 2005). A bilingual researcher and an official translator (verifying that the translated items maintained the original content) translated the INQ simultaneously. The concordance of each item in the two translations was discussed taking into account the equivalence of cultural aspects, grammatical and semantic concordance. Subsequently, a second researcher translated the Spanish version into English. This English version was then compared with the original scale to discuss discrepancies and finally establish a final version. This final version was submitted to a panel of experts (a rheumatologist, a pharmacologist, a psychologist and a methodologist) to evaluate the adjustment of each of the items to their corresponding domain.

After the translation of INQ was completed, an incidental sampling was initiated. We contacted fibromyalgia pa-

tient associations to request voluntary collaboration and provide the necessary information to participate (application procedure, collection of questionnaires and date and time for administration of questionnaires). On the day of administration, patients were informed about the purpose of the investigation and the mechanisms that guaranteed anonymity and confidentiality. The control group was formed through an accidental sampling, taking into account the age and sex of fibromyalgia patients. The same procedure was carried out as in the case of patients with fibromyalgia. All participants had access to an investigator in case of doubts related to the questionnaire.

All procedures performed in this study were in accordance with the ethical standards of the Research Ethics Committee of the University of Granada and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Instruments

The study protocol for all participants included an exploratory interview to collect the most relevant sociodemographic and clinical data, and application of the following questionnaires:

- *The Spanish version of Beck Depression Inventory II* (BDI-II; Beck et al., 1996; Sanz, García-Vera, Espinosa, Fortún, & Vázquez, 2005) for assessing the presence and intensity of depressive symptoms. The BDI-II includes 21 multiple choice items ranging from 0 to 3, being the highest score 63 and stablished as a cutoff score of 18 to consider the potential clinically relevant depression. The ninth item of the questionnaire allows evaluating the existence of SI. In our study, the scale shows a high internal consistency, with a Cronbach's alpha coefficient of .91 and with a Spearman-Brown split-half coefficient of .83.
- *The Spanish version of Plutchik Suicide Risk Scale* (Plutchik, van Prague, Conte, & Picard, 1989; Rubio et al., 1998). This is a self-administered 15-item scale that assesses the potential risk of suicide measuring previous suicide attempts, the current intensity of SI, depressive symptoms, and other aspects related to suicidal behaviors. The scale's score ranges from 0 to 15, and scores equal or higher than 6 points are considered as indicators of suicide risk. In our study, the scale shows adequate internal consistency, with a Cronbach's alpha coefficient of .77 and with a Spearman-Brown split-half coefficient of .84.
- *The Spanish version of 12-item Interpersonal Needs Questionnaire* (INQ-12; Van Orden et al., 2008). The INQ-12 evaluates the two key factors in SI: Feeling of being a burden to others, and the "thwarted belongingness" or the feeling of being disconnected regard to the others. Includes 12 items with a 7-point Likert scale from 1 (*not entirely true for me*) to 7 (*very true for me*).

Data analysis

First, we calculated the descriptive statistics (mean, standard deviation, skewness, and kurtosis) of the items of the INQ. In order to test the multivariate normality hypothesis to later selecting the appropriate model in the factorial analysis, the Kolmogorov-Smirnov test was first applied, if the normality assumption was fulfilled in all the indicators, we would perform the Mardia test for the verification of the multivariate normality.

Before performing EFA and CFA, the sample was randomly divided into two subsamples using the SPSS program. An EFA was performed in order to test the internal structure of the INQ scores of subsample 1 (*n* = 180). We calculated the Kaiser-Meyer-Olkin (KMO) index and the Bartlett's sphericity test as measures of the adequacy of the correlation matrix to the factor analysis. Principal axis method was employed because multivariate normal distribution of data could not be assumed. The number of extracted factors was two, according to the theoretical model. Moreover, a parallel analysis was carried out using the O'Connor macro (2000) in order to test the compatibility with a two-dimension hypothesis. A method of oblique rotation (Oblimin) was used because the theoretical model does not establish orthogonality between both factors. There were no missing data. Those items whose factorial loadings did not correspond to what was predicted by the theory or had loads lower or equal than .40 were eliminated.

The two-factorial solution previously obtained was validated using a CFA on the data coming from subsample 2 (*n* = 179). The robust maximum likelihood (MLR) estimation method was used. To evaluate the model fit, the Standardized Root Mean square Residual (SRMR), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Mean Square Error Approximation (RMSEA) were used. A cutoff value close to .08 for SRMR, a cutoff value close to .95 for CFI and the TLI, and a cutoff value close to .06 for RMSEA indicate a good fit (Hu & Bentler, 1999). When RMSEA is higher than or equal to .10 and TLI and CFI values are lower than .90 the model should be discarded (Brown, 2006). Latent factors metric was established by fixing to 1.00 the factor loading of the first indicator of each dimension. There were no missing data. The correlation between factors was estimated freely. The reliability of the INQ using the Cronbach's alpha and Spearman-Brown split-half was tested in each subsample.

In addition, evidence of validity based on differential scores was obtained. For this, the mean scores of the INQ subscales of the fibromyalgia group and control group were compared through t-test. Finally, to obtain evidence of validity based on the relationship with other constructs, the correlations between the scores of the two subscales of the INQ with the results obtained in the ninth item of BDI-II, the total score of BDI-II, and the Plutchik Suicide Risk Scale were calculated.

All analyzes were performed using the statistical package SPSS version 22.0 and Mplus version 7.11 (Muthén & Muthén, 1998–2012).

Results

Descriptive statistics of the INQ

Table 1 shows the descriptive statistics of the INQ-12. Recoded scores can range from 1 to 7. The item 2b had the highest average score (*M* = 4.32; *SD* = 2.18), and the item 5a had the lowest (*M* = 2.36; *SD* = 2.03). The Kolmogorov-Smirnov test was statistically significant (*p* < .001) for all items and, consequently, the null hypothesis for a normal distribution of scores was rejected.

Table 1. Descriptive statistics of Spanish version of items of Interpersonal Need Questionnaire (INQ).

	Items	*M*	*SD*	*Skewness*	*Kurtosis*
1a	Últimamente creo que la gente cercana a mí estaría mejor si yo desapareciera	2.88	2.14	0.72	-0.93
2a	Últimamente creo que la gente cercana a mí sería más feliz sin mí presencia	2.85	2.12	0.74	-0.90
3a	Últimamente creo que le he fallado a la gente cercana a mí	3.59	2.31	0.20	-1.49
4a	Últimamente siento que soy una carga para la gente cercana a mí	3.59	2.30	0.21	-1.50
5a	Últimamente creo que la gente cercana a mí desearía librarse de mí	2.36	2.03	1.22	0.01
6a	Últimamente creo que empeoro las cosas para la gente cercana a mí	3.48	2.23	0.32	-1.36
7a	Últimamente pienso que contribuyo al bienestar de la gente cercana a mí	4.06	1.88	0.06	-0.98
1b	Últimamente la gente se preocupa por mí	3.51	1.95	0.32	-1.10
2b	Últimamente me siento desconectado de la gente	4.32	2.18	-0.27	-1.34
3b	Últimamente creo que hay gente a la que puedo recurrir en caso de necesidad	3.27	2.09	0.44	-1.20
4b	Últimamente me siento cercano a otras personas	3.85	2.02	0.10	-1.30
5b	Últimamente suelo tener, al menos una cada día, relación social satisfactoria con las personas	3.90	2.13	0.07	-1.36

Evidence of validity based on internal structure: EFA and CFA

Exploratory Factorial Analysis (EFA)

An EFA was carried out on INQ answers of Subsample 1. A good sampling adequacy (KMO = .86) was obtained, and Bartlett's test of sphericity was 1347.59 ($p < .001$), allowing the implementation of the exploratory factor analysis. The parallel analysis identified two factors to be extracted (Figure 1). The two-factor solution (Table 2) accounted for 57.82% of the variance; the correlation between factors was .36.

Despite the existence of two factors, which could be called "perceived burdensomeness" (factor 1) and "thwarted belongingness" (factor 2), the internal structure of INQ-12 was compromised by the factor loadings of items 7a (which saturated in the two factors) with values lower or equal than .40, and 2b (.07), which did not correspond to that predicted by the theoretical model. Consequently, the exploratory factor analysis was executed again without both items.

Table 2. Pattern matrix of the INQ-12 and INQ-10.

Items	INQ-12		INQ-10	
	Factor 1	Factor 2	Factor 1	Factor 2
1a	**.95**	-.07	**.95**	-.04
2a	**.93**	-.06	**.91**	.03
3a	**.76**	.02	**.75**	.05
4a	**.91**	-.05	**.89**	-.01
5a	**.66**	.13	**.66**	.17
6a	**.76**	-.09	**.75**	-.06
7a	**.40**	.23	-	-
1b	-.12	**.60**	-.11	**.58**
2b	**.58**	.07	-	-
3b	-.04	**.86**	-.04	**.87**
4b	.15	**.70**	.14	**.71**
5b	.24	**.62**	.24	**.63**
	44.5%	13.4%	47.2%	15.9%
Variance explained	57.82%		63.07%	
Kaiser-Meyer-Olkin test	.864		.851	
Bartlett's sphericity test	1347.59*		1204.42*	

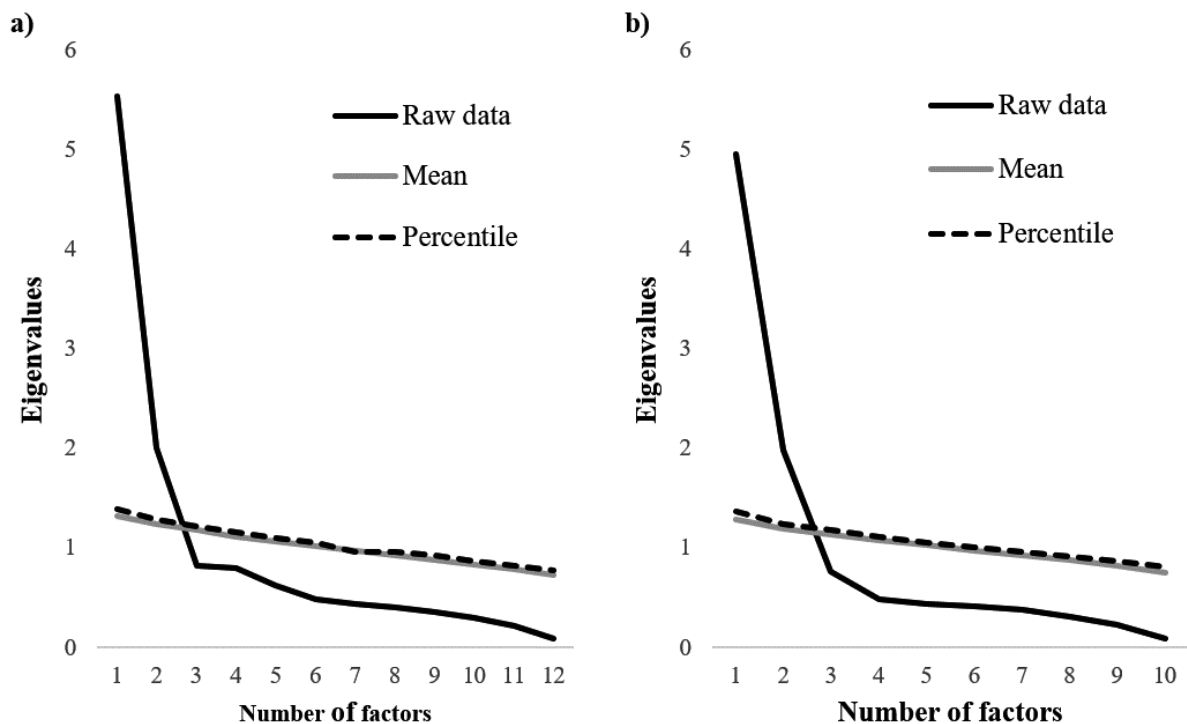*Note.* Factor loadings > .3 are in boldface. *$p < .001$.

Figure 1. Sediment Graphs of the Parallel Analyses a) INQ-12, and b) INQ-10.

For this 10-item version of the INQ, the Kolmogorov-Smirnov test was statistically significant ($p < .001$) for all items and, consequently, the null hypothesis for a normal distribution of scores was rejected. A good sampling adequacy (KMO = .85) was found, and Bartlett's test of sphericity was 1204.42 ($p < .001$), allowing factorizing the correlation matrix. The principal axis factoring method resulted in two factors (Table 2) that accounted for 63.07% of the variance. These results supported the theoretical structure of two factors: "perceived burdensomeness" (factor 1) and "thwarted belongingness" (factor 2), between which a correlation of .33 was found. The parallel analysis also identified two factors to be extracted, using this analysis as an extra criterion (Figure 1). Table 2 shows the pattern matrix.

Confirmatory Factorial Analysis (CFA)

Once the EFA was conducted, a CFA was performed on subsample 2 INQ scores to confirm the internal structure of the INQ-10. The initial results showed bad RMSEA estimations (.131 [.109, .155]) and just acceptable CFI and SRMR estimations (.91 and .05 respectively). The source of this misfit was identified using the modification indices. Those indices informed about a potential significant correlation between the uniqueness of items 1a and 2a (Modification index

= 75.83). A simple look to the content of both items allows recognizing that both contents are very similar. For this reason, the CFA was repeated but this time freeing the correlation between the uniqueness of items a1 and a2. This time, fit indicators showed good model fit: RMSEA = .073 (90% confidence interval: .046 - .100); SRMR = .046; CFI = .96; TLI = .95. Figure 2 shows the standardized factorial coefficients of the model. The structure found mirrors the version proposed by Van Orden et al. (2010).
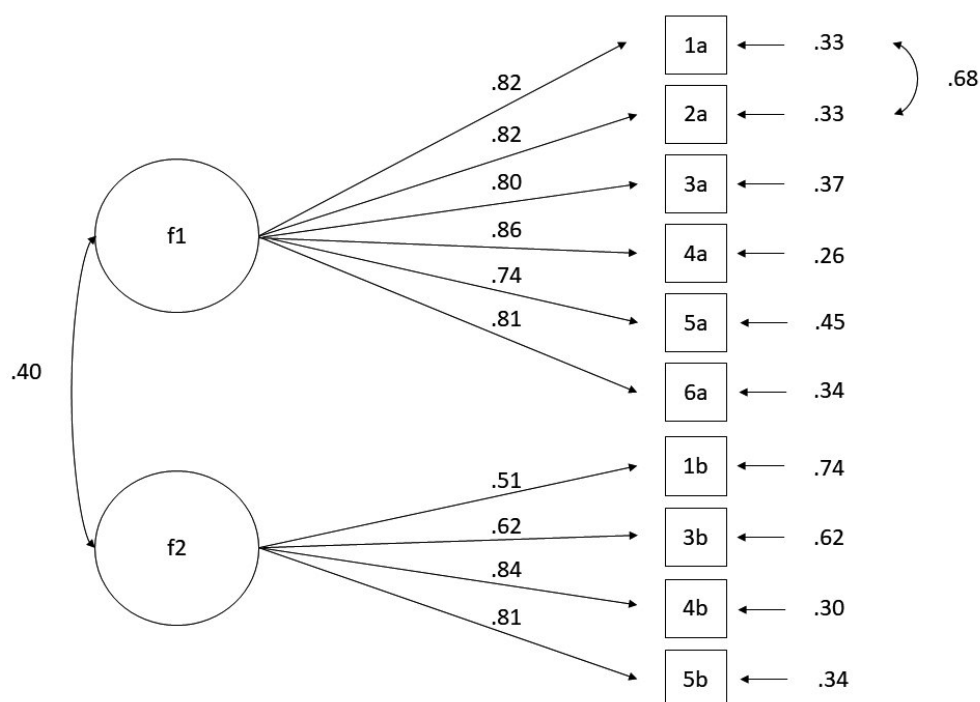

Figure 2. Results of Confirmatory Factor Analysis of the INQ-10. Standardized Solution.

Estimation of reliability

For the INQ-10, the total score for the subscale "perceived burdensomeness" can range from 6 to 42 (M = 18.75; SD = 11.18), and the total score for the subscale "thwarted belongingness" can range from 4 to 28 (M = 14.57; SD = 6.49).

For the total sample, and on the subscale "perceived burdensomeness", the reliability estimated using the Cronbach's alpha coefficient was .92 and using Spearman-Brown split-half was .92. Likewise, for the subscale "thwarted belongingness", the reliability estimated using the Cronbach's alpha coefficient was .80 and using the Spearman-Brown split-half coefficient was .84.

Evidence of validity based on differential scores

We obtained validity evidence contrasting the mean score of each subscale of INQ-10 between the FMS patients (Bur-

densomeness: M = 18.75; SD = 11.18; Belongingness: M = 14.57; SD = 6.49) and the control group representing the general population (Burdensomeness: M = 9.45; SD = 5.09; Belongingness: M = 10.24; SD = 5.86). Statistically significant differences between groups were found for both subscales: perceived burdensomeness [t (355.58) = 11.79; p < .001 (d = 1.07)], and thwarted belongingness [t (166.44) = 6.29; p <. 001 (d = 0.70)].

Evidence of validity based on the relationship with other variables

We obtained evidence of validity based on the relationship between the scores of both subscales of INQ-10, and three external variables related to SI: The ninth item of the BDI-II, the total score of BDI-II, and the Plutchik Suicide Risk Scale.

All the associations found between variables were moderate, positive, and statistically significant (Table 3).

Table 3. Pearson's coefficients for correlations between scores of both subscales of INQ-10 and the external variables measured; the total score of Beck Depression Inventory-II (BDI-II), the ninth item of BDI-II, and the total score of Plutchik Suicide Risk Scale.

Factors	INQ-10 Thwarted belongingness	BDI-II (total)	BDI-II (9th item)	Plutchik (total)
INQ-10 Perceived burdensomeness	.35*	.75*	.53*	.67*
INQ-10 Thwarted belongingness	-	.41*	.30*	.43*
Mean		28.53 (range 0-63)	0.61 (range 0-3)	7.79 (range 0-15)
SD		11.87	0.70	3.23

*p < .001.

Discussion

According to the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010) two factors simultaneously contribute for the passage of the passive SI to active suicidal behavior: the feeling of being a burden and the thwarted belongingness, both surrounded by an aura of hopelessness based on the inkling of perpetuity of these feelings. The high prevalence of SI in chronic pain patients (Braden & Sullivan, 2008; Fishbain et al., 2009; Ratcliffe et al., 2008; Scott et al., 2010) suggests that these constructs may be playing an important role in precipitation or cause SI in these patients, which is a prerequisite to other and graver suicidal behavior (Silverman et al., 2007). In this scene, the early detection of SI is essential to redress the treatment of these patients and avoid fatal consequences.

The INQ (Van Orden et al., 2008) was proposed as the gold-standard tool for assessing the presence of SI, being of an urgent need the adaptation of a Spanish version for using in the clinical setting. This study aimed to analyze the internal structure, the internal consistency, and to obtain validity evidence of a Spanish adaptation of INQ as a preliminary phase to obtain an instrument in Spanish that can capture the two key constructs related to SI: the perceived burdensomeness and the thwarted belongingness.

The results of this study are consistent with the interpersonal theory of suicide. The analysis of the internal structure of the INQ items allows identifying both constructs: the perceived burdensomeness and the thwarted belongingness. However, the analysis of the internal structure of the 12-item version (INQ-12) indicates inadequate factor loading of items 7a and 2b, which were incongruent with the theoretical model (Joiner, 2005) and empirical findings (Freedenthal et al., 2011; Van Orden et al., 2010). Despite this mismatch, the exploratory nature of the study allowed adopting a 10-item Spanish version of INQ, which had a simple factor structure and replicated the version proposed by Van Orden et al. (2010).

Moreover, in this version of 10-item, the reliability was adequate in both INQ subscales. In order to provide robustness to data, we obtained the validity evidence based on the INQ scores relationship with other constructs closely linked to SI, and we contrasted the mean scores obtained in INQ by FMS patients with those obtained by a control group representing the general population. Both factors of INQ correlated positively with each other, and with each of the variables proposed as was found by previous research (Anestis & Joiner, 2011; Freedenthal et al., 2011; Marty, Segal, Coolidge, & Kleve, 2012) and in line with the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010).

Few studies have focused on the association between FMS and suicidal behavior. Despite this, there is evidence that these patients suffer a higher prevalence of SI (Calandre et al., 2015; Jimenez-Rodriguez et al., 2014; Triñanes et al., 2014) compared to other pathologies characterized by chronic pain. It is well established that chronic pain patients usually show high rates of SI (Tang & Crane, 2006), which are bigger than general population rates (Nock et al., 2008). This effect is also observed in our sample: FMS patients obtained significantly higher scores than the control group in both subscales of INQ.

Our study aimed to provide a tool to measure two constructs closely linked to SI. These constructs may be playing a key role in the development and progression of SI in fibromyalgia patients. The empirically supported aspects of ideation-to-action theories should be incorporated for intervention and prevention efforts. For example, Anestis et al. (2016) show a clear example of how these theories applied to intervention can save lives.

The limitation of this study is mainly focused on the sampling and selection of participants. For this reason, the generalization of the findings derived from this study should be cautiously taken.

However, the findings of this study support the adequate psychometric properties of the Spanish version of INQ-10. An easy-to-administer and brief tool is advantageous in the clinical setting. Additional processes are necessary to generalize these finding and providing validity in relation to other variables. Future research should compare the results with broader and heterogeneous samples. In addition, it would be necessary to determine the sensitivity and specificity of INQ-10 for the establishment of reference scales and diagnostic cut points.

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