
The Anxiety Sensitivity Index-3: Factor structure and psychometric properties in Italian clinical and non- clinical samples

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• **ABSTRACT.** Lo studio descrive le caratteristiche psicometriche dell'*Anxiety Sensitivity Index - 3 (ASI-3)* che è stato tradotto in italiano con la procedura della back-translation e somministrato ad un campione misto di pazienti con disturbi d'ansia ($n = 154$) e soggetti non clinici ($n = 629$), assieme a misure di anxiety sensitivity, depressione e ansia. L'analisi fattoriale confermativa ha confermato la struttura con un fattore generale e tre sotto-fattori (fisico, mentale e sociale). L'ASI-3 ha dimostrato buone proprietà psicometriche. Tutti i gruppi di pazienti hanno ottenuto punteggi totali superiori rispetto al gruppo non clinico; pazienti con Disturbo di Panico e Disturbo d'Ansia Generalizzato hanno riportato punteggi totali più elevati rispetto agli altri gruppi clinici (Disturbo Ossessivo Compulsivo e Fobia Sociale).
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• **ABSTRACT. Introduction:** This study examined the factorial structure, internal consistency, and construct validity of the Italian version of the Anxiety Sensitivity Index-3 (ASI-3). **Methods.** ASI-3 has been translated with a back-translation procedure and then administered in a mixed sample of anxiety disorder patients ($n = 154$) and non-clinical participants ($n = 629$), along with measures of anxiety sensitivity, depression and anxiety. **Results.** Confirmatory factor analyses confirmed the hierarchical model of a single higher order factor and three lower order factors (physical, social, and cognitive concerns). ASI-3 demonstrated sound psychometric properties. **Conclusions.** Participants with different clinical status differed from each other on the ASI-3 subscales in theoretically meaningful ways. Panic disorder patients scored higher on the social concerns subscales than social phobia patients. The Italian version of the ASI-3 is a reliable tool, but more studies with Italian clinical samples are needed to further explore the criterion-related validity of the three ASI-3 subscales.

Keywords: *Anxiety Sensitivity Index-3, validity, Italy*

INTRODUCTION

Anxiety sensitivity (AS) refers to the fear of anxiety-related sensations (e.g. blushing, racing heart, feeling dizzy), arising from the belief that there will be some harmful consequences as a result of having these symptoms (Reiss & McNally, 1985). AS is conceptualized as an anxiety amplifier: highly anxiety-sensitive people find their own arousal to be dangerous, and therefore experience intensified anxiety in response to fear-eliciting stimuli (Taylor, 1999). AS is considered to play a significant role in the development and maintenance of anxiety disorders. Several studies have shown that AS is higher among anxiety disorder patients compared to control participants (Olatunji & Wolitzky-Taylor, 2009), and a person's current level is a risk factor for the development of anxiety disorders (Wheaton et al., 2012). AS is considered a personality trait that is stable over time, but it has been shown to decrease during psychological treatment (Smits, Berry, Tart & Powers, 2008).

The most widely used measure of AS is the *Anxiety Sensitivity Index* (ASI; Reiss, Peterson, Gursky & McNally, 1986). The ASI is a 16 item self-report scale that measures the degree to which one is concerned about possible negative consequences of anxiety symptoms. The ASI has been translated into a variety of languages and the norms are stable across cultures for both clinical and nonclinical groups (Reiss, 1991). Studies with clinical and nonclinical populations have also shown that the ASI has sound psychometric properties, including evidence of its high internal consistency, high test-retest reliability, criterion-related validity in distinguishing patients with anxiety disorders from controls, and construct validity as a measure of "fear of fear" as distinct from trait anxiety (Maller & Reiss, 1992; Isyanov & Calamari, 2004; Taylor, 1995). Although the ASI was constructed as a unidimensional measure, several factor-analytic studies of the ASI have provided support for a hierarchical multidimensional structure that consists of a single higher-order factor (i.e. AS) and a certain number of lower order factors, with solutions ranging from one to four factors (Rodriguez et al., 2004; Taylor, 1999; Zinbarg, Barlow & Brown, 1997).

The most commonly replicated factor solution consists of three correlated factors: *physical concern* (PC), *social concerns* (SC), and *cognitive concerns* (CC; Taylor et al.,

2007). The physical concerns factor refers to the fear of somatic anxiety symptoms, which are believed to lead to a catastrophic physical issue. The social concerns dimension pertains to the belief that a public exhibition of anxiety symptoms will result in public ridicule and ostracism. The cognitive concerns factor refers to the fear of the mental correlates of anxiety symptoms, considered as signals of a mental disorder. The three-factor structure has been shown to be consistent across gender and age (Taylor et al., 2007). A possible reason for inconsistencies in factor structure of the ASI might be related to the insufficient number of items constituting two of the three dimensions. In fact, half of the ASI items assess physical concerns, leaving too few items to load into the other AS dimensions (Deacon & Valentiner, 2001). In addition, five items are not explicitly linked to AS (e.g. "It is important for me to stay in control of my emotions"), undermining the scale's construct validity (Blais et al., 2001). To overcome this limitation, Taylor and Cox (1998a, 1998b) developed a 36-item revised scale – the ASI-R – and the 60-item Anxiety Sensitivity Profile. However, studies of these instruments did not reveal consistent factor solutions (e.g. Deacon, Abramowitz, Woods & Tolin, 2003; Taylor et al., 2007).

In order to provide a valid multidimensional measure of AS, Taylor and colleagues (2007) recently developed the Anxiety Sensitivity Index-3 (ASI-3). The ASI-3 was developed in four studies with diverse samples, including a clinical sample from the United States and Canada and nonclinical samples from the United States, Canada, France, Mexico, the Netherlands, and Spain. Further evaluations of the ASI-3 have been conducted with both clinical and nonclinical samples in United States (e.g. Ebesutan et al., 2013; Wheaton et al., 2012), Canada (Olthuis, Watt & Stewart, 2013), Spain (Sandin, Valiente, Chorot & Santed, 2007), Turkey (Mantar, Yemez & Alkin, 2010), Korea (Lim & Kim, 2012), and Brazil (Escocard, Fioravanti-Bastos & Landeira-Fernandez, 2009). This measure consists of 18 items, with six items comprising each of the physical, social, and cognitive concerns.

A hierarchical multidimensional structure, with the three lower order factors loading on a single superordinate factor (i.e. general AS) has also been proposed (Escocard et al., 2009; Taylor et al., 2007). This hierarchical structure

has implications for the relation between AS and several anxiety problems. In fact, AS in general is considered a trait-like vulnerability factor common across many anxiety problems (Wheaton et al., 2012), whereas the three lower-order factors may reflect specific ways through which AS develops and maintains several mental health symptoms.

For example, research suggests that the physical concern dimension is more strongly associated with panic attacks and panic disorder (PD), than social or cognitive concerns (Deacon & Abramowitz, 2006). Social concerns are most strongly related to the diagnosis of social phobia (SP; Taylor et al., 2007) while some studies have suggested that generalized anxiety disorder (GAD) might be characterized by high AS cognitive concerns (Rector, Szacun-Shimizu & Leybman, 2007).

Taylor and colleagues (2007) provided evidence of the improved psychometric properties of the ASI-3, as compared to ASI. ASI-3 demonstrated a more stable factor structure and greater construct validity than ASI. Therefore, the use of ASI-3 is preferred to the ASI, especially when investigating the three dimensions of the AS.

The present study

To date, there are no adaptations of the ASI-3 for use in the Italian context. The aim of the present study was to develop and validate an Italian version of the ASI-3 in a mixed sample of anxiety disorder patients and non-clinical adult participants. The hypothesized hierarchical model (three factors loading on a higher order AS factor) found in many studies (Escocard et al., 2009; Taylor et al., 2007) was compared to a one-factor model (in which all 18 items load on a single factor) and a two-factor model (consisting

of a Physical Concerns factor and a combined factor where the Social/Cognitive Concerns factor), to ascertain that it fits the data significantly better than simpler models. The invariance of the model across different sub-samples was also tested.

Gender differences at the ASI-3 score were also explored, and we expected women to exhibit significantly higher anxiety sensitivity than men, as already reported in previous studies (e.g. Jurin, Jokic-Begic & Lauri Korajlija, 2012; Stewart, Taylor & Baker, 1997).

Internal consistency and construct of the ASI -3 subscales and for the overall ASI-3 scale were examined. Consistent with Taylor et colleagues (2007), convergent and discriminant validity would be supported when similar subscales of ASI-3 and ASI (e.g. ASI-3 and ASI Physical Concerns) would be more highly correlated than dissimilar subscales, and when positive correlations would be found between ASI-3 and other related constructs (trait anxiety measure and depression). Criterion-related validity was tested examining the comparisons of ASI-3 scores across the different groups of anxiety disorder patients comprising our clinical sample – panic disorder (PD), obsessive-compulsive disorder (OCD), social phobia (SP), and generalized anxiety disorder patients (GAD). In line with Taylor et colleagues (2007), we expected that all the 4 clinical groups would have higher ASI-3 total and subscales scores than would the non-clinical (NC) group. Moreover, it was hypothesized that the physical concerns scores would be higher among PD patients, and social concerns scores would be higher among SP patients, as compared to all other groups. Given the mixed findings regarding the cognitive concern dimension, no a-priori predictions were made about differences in this subscale.

METHOD

Participants

The total study sample consisted of 783 Italian adults: 629 non-clinical participants recruited from the community ($M_{age} = 33.15$; $SD = 11.79$; 359 women (57.1%) and 270 men (42.9%), and 154 treatment-seeking patients with a primary

anxiety disorder diagnosis (see Table 1). Non-clinical participants were recruited via several professional mailing lists and web advertising. Patients with anxiety disorders had presented for evaluation and treatment at several Italian clinical centers of the Associazione di Psicoterapia Cognitiva (APC/SPC, Rome, Italy).

Table 1 - Anxiety disorder patient distribution by age and gender

Diagnosis	Age	Female	Male
Obsessive- Compulsive Disorder (n = 56)	33.30 (11.66)	26 (46.4%)	30 (53.6%)
Social Phobia (n = 18)	31.94 (7.42)	10 (55.6%)	8 (44.4%)
Generalized Anxiety Disorder (n = 26)	36.88 (12.33)	19 (73.1%)	7 (26.9%)
Panic Disorder (n = 54)	33.72 (9.67)	40 (74.1%)	14 (25.9%)
Total (N = 154)	33.90 (10.69)	95 (61.68%)	59 (38.32%)

Note. For age, mean and standard deviation are presented. For gender, raw frequency and percentage are presented.

Procedure

For the clinical sample, diagnoses were made by experienced psychiatrists according to DSM-IV-TR criteria (APA, 2000) as assessed by SCID-I (First, Spitzer, Gibbon & Williams, 1997) structured interview. After providing informed consent to participate in the study, participants completed a series of forms comprising the study survey. The survey was administered individually in a single session and it took about 30 minutes to complete. The study was approved by the local Ethics Committee.

Measures

Socio-demographic and personal information. Participants completed a socio-demographic form, which included items regarding gender, age, and ethnicity.

Anxiety Sensitivity Index-3 – Italian version. ASI-3 is an 18-item self-report questionnaire composed of three 6-item subscales: physical (e.g. “It scares me when my heart beats rapidly”), cognitive (e.g. “When my mind goes blank, I worry there is something terribly wrong with me”), and social (e.g. “It scares me when I blush in front of people”) concerns. Participants are asked to indicate the extent to which they agree or disagree with each item on a 5-point Likert scale

(0 = very little to 4 = very much). Subscale (range = 0-24) and total (range = 0-72) scores are calculated by summing relevant items.

The 18 items of the ASI-3 were translated and adapted for Italian language with a back-translation procedure. First, 2 independent professional English translators translated the measure into Italian and then 2 independent native English speakers with excellent knowledge of Italian created a back-translation into English. We then compared the original version of ASI-3 with the back-translations to evaluate the adequacy of the Italian translations. Discrepancies emerging from this procedure were discussed until an agreement on a common version was reached. Internal consistency of each of the three subscales and of the total ASI-3 scale for the present study is reported in Table 2.

Anxiety Sensitivity Index. The ASI (Reiss et al., 1986; validated in Italian by Bernini et al., 2008) is a 16-item measure on which respondents indicate the degree to which they fear the potential negative consequences of anxiety-related symptoms. The ASI includes a physical concerns factor (eight items), a social concerns factor (four items) and a cognitive concerns factors (four items). Participants are asked to indicate the extent to which they agree or disagree with each item on a 5-point Likert scale (0 = very little to 4 = very much). Subscale (range = 0-16, for the social and cognitive concerns factors; range = 0-32,

for the physical concerns factor) and total (range = 0-64) scores are calculated by summing relevant items. Internal consistency of each of the three subscales and of the total ASI scale for the present study is reported in Table 2.

Depression. The BDI-II (Beck, Steer & Brown, 1996; validated in Italian by Ghisi et al., 2006) was administered. The BDI-II is a 21-item self-report scale measuring the severity of depressive symptoms. Each item comprises four statements reflecting varying degrees of intensity of depressive symptoms. Subjects are asked to choose the statement that best describes the way they have felt over

the past 2 weeks. In this study, internal consistency was $\alpha = .90$ for the non-clinical sample, and $\alpha = .92$ for the clinical sample.

Trait Anxiety. The Spielberger State-Trait Anxiety Inventory – Trait Form (STAI; Spielberger, Gorsuch & Lushene, 1970; validated in Italian by Pedrabissi & Santinello, 1996) was administered. The STAI-Trait Form is a 20-item self-report measure of anxiety proneness requiring participants to rate their frequency of anxiety symptoms on a 4-point Likert scale (1 = never to 4 = always). In this study, internal consistency was $\alpha = .91$ for the non-clinical sample, and $\alpha = .93$ for the clinical sample.

Table 2 - Cronbach's alpha (α), M and SD of ASI-3 and the other measures for the clinical and non-clinical sub-samples

	α	Non-clinical sample (n = 629)			t (627)	Clinical sample (n = 154)			t (152)
		TOT	Female (n = 359)	Male (n = 270)		TOT	Female (n = 95)	Male (n = 59)	
		M (SD)	M (SD)	M (SD)		M (SD)	M (SD)	M (SD)	
PC (ASI-3)	.87	3.82 (4.02)	4.04 (4.19)	3.54 (3.77)	1.5	9.04 (6.84)	9.73 (6.53)	7.93 (7.24)	1.59
CC (ASI-3)	.83	2.60 (3.15)	2.83 (3.29)	2.30 (2.93)	2.09*	9.14 (6.79)	9.03 (6.49)	9.31 (7.32)	.24
SC (ASI-3)	.81	5.77 (4.03)	6.06 (4.09)	5.37 (3.94)	2.13*	11.30 (5.85)	11.11 (5.63)	11.61 (6.22)	.51
AS (ASI-3)	.90	12.19 (9.22)	12.93 (9.55)	11.21 (8.68)	2.32*	29.47 (16.55)	29.86 (15.62)	28.85 (18.07)	.37
PC (ASI)	.86	7.32 (5.71)	7.89 (5.88)	6.57 (5.48)	2.88**	14.11 (8.03)	14.87 (7.63)	12.88 (8.56)	1.5
CC (ASI)	.69	2.18 (2.37)	2.39 (2.46)	1.91 (2.22)	2.53*	6.10 (4.50)	5.89 (4.38)	6.44 (4.71)	.73
SC (ASI)	.53	5.59 (2.75)	5.55 (2.72)	5.64 (2.78)	.41	7.69 (3.17)	7.38 (2.66)	8.20 (3.84)	1.57
AS (ASI)	.87	15.10 (9.04)	15.83 (9.17)	14.12 (8.78)	2.36*	27.91 (13.51)	28.15 (12.54)	27.53 (15.06)	.28
STAI- Trait	.91	39.79 (9.23)	42.03 (9.48)	36.81 (7.98)	7.29**	56.27 (12.18)	57.34 (11.26)	56.56 (13.47)	1.4
BDI-II	.90	7.42 (6.75)	8.63 (7.04)	5.80 (5.97)	5.32**	18.71 (11.77)	19.53 (10.99)	17.39 (12.91)	1.1

Note. * $p < .05$, ** $p < .01$; PC = physical concerns; SC = social concerns; CC = cognitive concerns.

Data analysis

To test the factorial validity of the Italian version of the ASI-3, confirmatory factor analysis (CFA) on the total study sample was used, because previous research has systematically shown that a three-factor solution provide a good fit to the data both for clinical and non-clinical samples (Taylor et al., 2007; Wheaton et al., 2012). CFAs were conducted using Mplus 5.1 and the Maximum Likelihood (ML) estimation was chosen. The other statistical analyses were conducted using SPSS 17.0. To evaluate the model fit, several fit indexes were computed: the chi-square statistic and the ratio of the chi-square statistic to the degrees of freedom (χ^2/df), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the standardized root mean square residual (SRMR) were reported. Good model fit was defined by the following criteria (Hu & Bentler, 1999): $2 \leq \chi^2/df \leq 3$; $RMSEA \leq .06$; $SRMR \leq .08$; $CFI \geq .95$; and $TLI \geq .95$. The internal consistency of the ASI-3 were measured by Cronbach's alpha coefficients. Pearson's correlation coefficients were calculated to assess the convergent and discriminant validity of the scale. A series of one-way ANOVAs was conducted to evaluate clinical groups differences on the overall ASI-3 and on the three subscales.

RESULTS

Confirmatory Factor Analysis

A first CFA was performed to determine the appropriateness of the hierarchical model (three factors loading on a higher order AS factor) found in previous research. Goodness-of-fit indices indicated adequate model fit ($\chi^2 = 605.83$ ($df = 132$), $p < .001$, $\chi^2/df = 4.5$, $RMSEA = .07$, $SRMR = .04$, $CFI = .96$ and $TLI = .96$). We next compared the fit of this model to that of one and two-factor models: none of these alternative models fitted the data adequately.

The fit indices for the one-factor model (in which all 18 items load on a single factor) were: $\chi^2 = 2964.73$ ($df = 135$), $p < .001$, $\chi^2/df = 21.96$, $CFI = .77$, $TLI = .81$, $SRMR = .081$, and $RMSEA = .164$. The fit indices for the two-factor model (consisting of a Physical Concerns factor and a combined Social/Cognitive Concerns factor) were $\chi^2 = 1667.38$ ($df = 134$), $p < .001$, $\chi^2/df = 12.44$, $CFI = .86$, $TLI = .91$, $SRMR = .064$, and $RMSEA = .116$.

It was also examined whether the retained solution fitted

the data unvaryingly across different subgroups. For each grouping variable (sex and clinical status) we estimated two multigroup structural equation models (an unconstrained and a constrained model). A nonsignificant difference in fit between the two models was taken to indicate that the factor loadings and correlations did not differ significantly across groups (Vandenberg & Lance, 2000). Findings from these invariance analyses indicated that the three-factor solution fitted the data adequately and equivalently for both men and women, $\Delta\chi^2(36) = 50.52$, $p = .06$; $\Delta CFI < .001$; $\Delta TLI < .001$, and for the clinical and non-clinical subsamples, $\Delta\chi^2(36) = 49.52$, $p = .07$; $\Delta CFI < .001$; $\Delta TLI < .001$. Factor loadings of the retained solutions are shown in Figure 1.

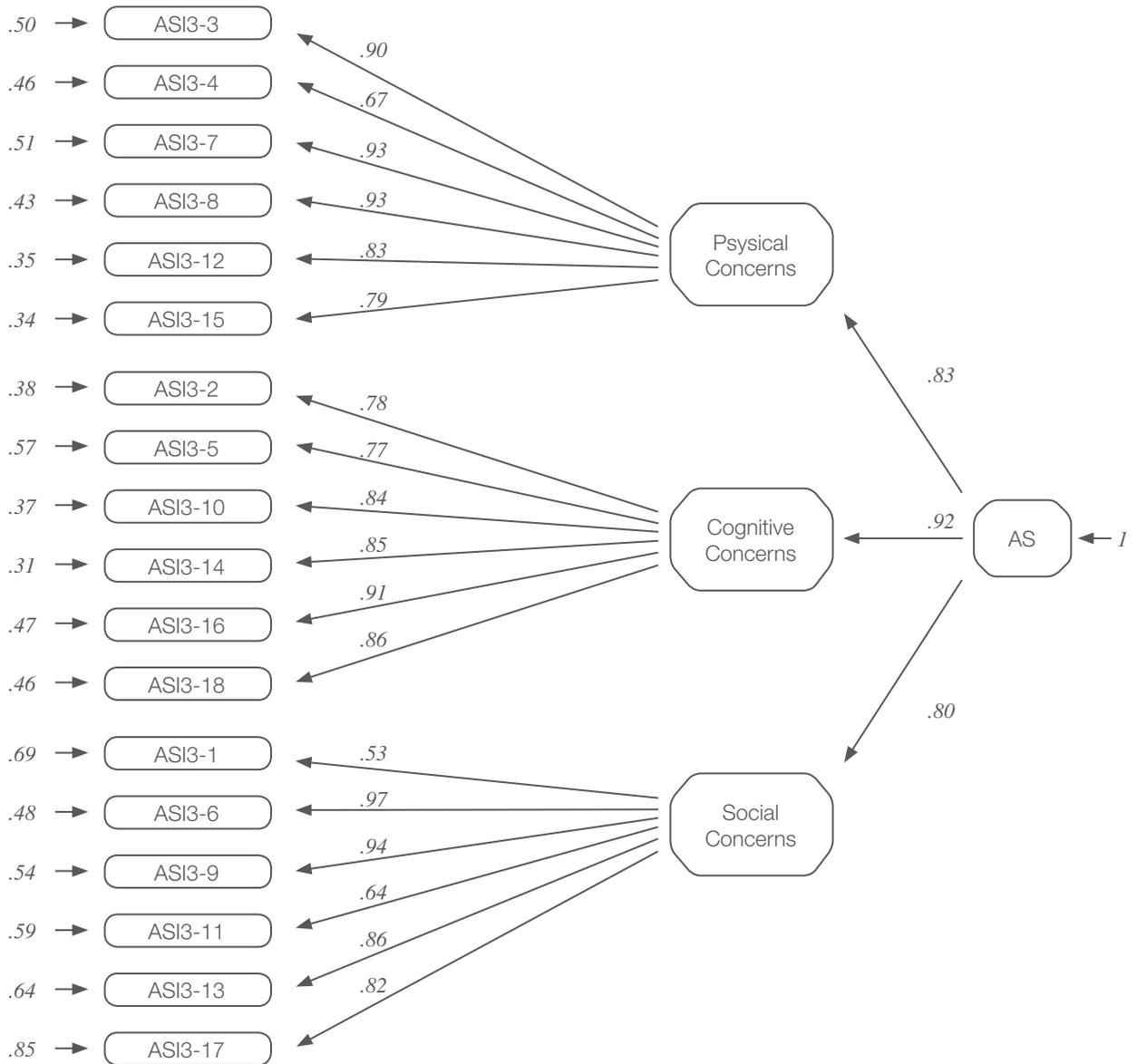
Scale Performance

Both skewness and kurtosis values were close to 0 for all the items, consistent with the assumption of approximate normal distributions. Cronbach's alphas for total ASI-3 scale and for the three subscales all suggested good reliability for both sub-samples (see Table 2). Values of mean and standard deviation of the total ASI-3 scale and of the three subscales, were reasonable and consistent with previous findings (Taylor et al., 2007). A series of *t* tests revealed significant gender differences, with females exhibiting significantly higher ASI-3 scores than males, but only in the non-clinical sub-sample. Women also exhibited significantly higher ASI, STAI-T, and BDI-II scores than males, but only in the non-clinical sub-sample (see Table 2).

Correlates of ASI-3 total score and subscales

The ASI-3 lower-order factors were strongly correlated with ASI-3 total scores and the three ASI-3 factors were moderately intercorrelated (see Table 3). To test construct validity of ASI-3 we examined the correlations of the subscales and the overall ASI-3 scale with ASI and other related constructs. In line with our expectations, analogous subscales of ASI-3 and ASI were positively correlated, and were more highly correlated than dissimilar subscales. Moderate positive correlations were also found between ASI-3 STAI-trait and BDI-II scores (see Table 3).

Figure 1 - Standardized solution of the hierarchical model of the Italian version of the ASI-3



Note. All factors loadings are significant at $p < .001$.

Group comparisons

A series of one-way ANOVAs was performed to compare the four clinical groups, as well as the non-clinical participants on the ASI-3 total and subscales scores. Group means, standard deviations, and the results of ANOVAs and post-hoc Fisher LSD tests are presented in Table 4. ASI-3 total scores were significantly higher in each clinical group compared to the non-clinical group. Among the clinical groups, individuals with PD and GAD had significantly higher ASI-3 total scores compared to OCD and SP patients, and OCD patients scored higher than SP patients. With regard to the physical concerns

subscale, PD group scored significantly higher than each of the other clinical groups, and GAD group scored higher than OCD and SP groups.

All four clinical groups scored higher on physical concerns compared to the NC group. As regards the cognitive concerns subscale, all the clinical groups scored significantly higher than the NC group. In addition, both the PD, GAD and OCD groups scored higher than the SP group. With regard to the social concerns subscale, all four clinical groups scored higher than the non-clinical group. Patients diagnosed with PD scored significantly higher than each of the clinical groups, except for GAD patients.

Table 3 - Pearson correlations between the Anxiety Sensitivity Index-3 (ASI-3; total and subscales) and other constructs

	Non-clinical sample (n = 629)				Clinical sample (n = 154)			
	PC ASI-3	CC ASI-3	SC ASI-3	AS ASI-3	PC ASI-3	CC ASI-3	SC ASI-3	AS ASI-3
CC ASI-3	.61**				.59**			
SC ASI-3	.43**	.52**			.45**	.50**		
AS ASI-3	.83**	.84**	.80**		.84**	.86**	.76**	
CC (ASI)	.44**	.72**	.50**	.66**	.53**	.89**	.51**	.79**
SC (ASI)	.31**	.40**	.60**	.54**	.41**	.46**	.74**	.64**
PC (ASI)	.76**	.55**	.46**	.73**	.87**	.59**	.56**	.82**
AS (ASI)	.60**	.66**	.61**	.79**	.79**	.75**	.69**	.91**
STAI- Trait	.31**	.41**	.42**	.43**	.29*	.44**	.30**	.35**
BDI-II	.28**	.39**	.33**	.40**	.19*	.39**	.22*	.33**

Note. * $p < .05$. ** $p < .01$.

DISCUSSION

Anxiety sensitivity (AS) is the fear of anxiety-related sensations, arising from beliefs that the sensations have harmful consequences such as death, insanity, or social rejection (Reiss & McNally, 1985). AS was originally conceived

as a unidimensional construct, as measured by the *Anxiety Sensitivity Index* (ASI; Reiss et al., 1986), and it was not designed to be multidimensional. As researchers and clinicians have increasingly focused their attention on dimensions of AS, rather than simply looking at AS as a global construct, ASI-3 was developed in order to provide a robust, psychometrically

sound measure of the three most widely replicated dimensions of anxiety sensitivity: physical, cognitive, and social concerns (Taylor et al., 2007). The present study aimed to give the first evaluation of the dimensionality and psychometric properties of the Italian translation of the ASI-3 in a mixed sample of anxiety disorder patients and non-clinical adult participants.

Findings from CFAs showed that the hierarchical model found in previous research (Escocard et al., 2009; Taylor et al., 2007) provided the best fit to the data and applied equally

well to men and women, as well as to clinical and non-clinical sub-samples. This model was also compared to one- and two-factor models and only the former fitted the data adequately well. Internal consistency coefficients of the total ASI-3 scale and the three subscales were high in both sub-samples, and comparable to those obtained in other studies. Values of mean and standard deviation of the total ASI-3 scale and of the three subscales, for both sub-samples, were reasonable and consistent with previous findings (Taylor et al., 2007).

Table 4 - Group differences on ASI-3 total and subscale scores

Scales	Groups	M	SD	F (4, 778)	Post Hoc Fisher LSD tests of group differences
ASI-3 Total	(1) NC (n = 629)	12.19	9.22	92.56**	2, 3, 4, 5 > 1; 5 > 2, 3; 4 > 2, 3; 2 > 3
	(2) OCD (n = 56)	25.82	12.22		
	(3) SP (n = 18)	17.78	17.35		
	(4) GAD (n = 26)	31.65	19.25		
	(5) PD (n = 54)	36.11	16.04		
Physical concern	(1)	3.32	4.02	60.81**	2, 3, 4, 5 > 1; 5 > 2, 3, 4; 4 > 2, 3
	(2)	6.18	4.66		
	(3)	5.94	5.62		
	(4)	10.23	7.64		
	(5)	12.80	6.74		
Cognitive Concern	(1)	2.18	2.37	89.87**	2, 3, 4, 5 > 1; 2, 4, 5 > 3
	(2)	6.13	4.16		
	(3)	4.61	4.43		
	(4)	6.81	4.86		
	(5)	6.57	4.53		
Social Concern	(1)	5.77	4.03	53.10**	2, 3, 4, 5 > 1; 5 > 2, 3
	(2)	10.32	4.69		
	(3)	8.94	7.43		
	(4)	11.15	6.22		
	(5)	13.17	5.78		

Note. * $p < .05$, ** $p < .01$; NC = non-clinical; OCD = obsessive compulsive disorder; SP = social phobia; GAD = generalized anxiety disorder; PD = panic disorder.

Females exhibited significantly higher ASI-3 total and subscale scores than males, but only in the non-clinical sub-sample, as already reported (Jurin et al., 2012). The three subscales were moderately intercorrelated, suggesting that they represent related but separate constructs. The ASI-3 also demonstrated good construct validity. In line with our expectations, ASI-3 and ASI total scores were highly correlated. Moreover, analogous subscales of ASI-3 and ASI were positively correlated, and were more highly correlated than dissimilar subscales. Positive but moderate correlations were also found between ASI-3, STAI-trait and BDI-II scores, supporting both the convergent and discriminant validity of the scale. Criterion validity of ASI-3 was also supported. Group comparisons of the ASI-3 total scores revealed that all clinical groups scored higher than the non-clinical group. Moreover, in line with previous research (Escocard et al., 2009), PD patients scored higher on the ASI-3 total scale than other clinical groups showing how AS is a relevant component of panic disorder. Differential patterns of association were observed at the level of AS dimensions. Contrary to our hypotheses, but in line with findings from Brazilian samples (Escocard et al., 2009), Social Concerns scores were not significantly higher in SP patients as compared to other clinical groups. Instead, Social Concerns scores were higher in PD patients than in SP patients. This result might be related to the smaller number of patients with social phobia comprising our sample, as compared to the other clinical groups. An alternative explanation for this result might be related to cultural differences in the expression of social phobia symptoms in Italy. Both issues deserve further exploration. As hypothesized, physical concerns scores were highest among patients with PD. We also found that cognitive concerns scores were higher in PD, DOC and GAD groups compared to the SF group. Again, cross-cultural differences might be responsible for the lower scores of SF at the cognitive and physical concerns subscales, as compared to other groups. More studies with Italian clinical samples are needed to clarify this pattern of results. Taken together, these results support a multidimensional conceptualization of AS, and the validity and reliability of the Italian version of the ASI-3. In line with results already found by Taylor and colleagues (2007), ASI-3 measures the construct of anxiety sensitivity more precisely than ASI. In fact, the Italian version of ASI-3 has a higher reliability and construct validity than the ASI, and its internal structure is stable across diverse samples. According to these results the Italian version of the ASI-3 may be considered a reliable and valid measure of the most robust dimensions of

the AS construct. Nonetheless, empirical research in different cultural contexts is needed to further examine the criterion-related validity of the three ASI-3 subscales.

Limitations and future directions

The present study has several limitations. In regards to the non-clinical sub-sample, although the sample size was sufficiently large, the methods of sample recruitment and data collection did not ensure sample representativeness. Findings from this study should be verified with a more representative sample.

Moreover, the clinical sub-sample was considerably smaller than the non-clinical sub-sample. Patients with social phobia and generalized anxiety disorder were undersampled. Thus, differences in ASI-3 total and subscale scores for these groups must be considered in light of this limitation. Research with larger clinical samples is needed to further examine the criterion-related validity of the three ASI-3 subscales, and provide sufficiently stable reference scores for patients with different anxiety or mood disorders. Due to these limitations, our study should be considered as an important first step in testing the validity of the Italian ASI-3 in clinical samples, and an extension of our work is highly encouraged. In conclusion, despite these limitations, the present study generated validation evidence for the Italian version of the ASI-3, showing that it can be considered a reliable and valid measurement instrument.

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