

Development, cross-cultural adaptation process and preliminary validation of the Italian version of the Nepean Dysphoria Scale

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Summary

Objectives

Dysphoria is a complex emotional state that is prevalent in the clinical setting but very vague in its precise meaning. The aim of this study was to develop and validate the Italian version of the Nepean Dysphoria Scale (NDS-I), a self-report questionnaire developed to measure the severity of dysphoria.

Methods

The NDS was translated into Italian and subjected to a cross-cultural adaptation process according to standard guidelines. The scale was then administered to 132 psychology students, together with other conceptually similar (Beck Depression Inventory II, Dysfunctional Attitude Scale – Form A, Toronto Alexithymia Scale) and conceptually different (Anxiety Sensitivity Index – 3) instruments.

Introduction

Dysphoria is a term that is becoming increasingly popular in clinical parlance, but its meaning is still surrounded by a halo of vagueness. It appears in the context of many psychiatric disorders, especially borderline personality disorder, mood and anxiety disorders and delusional disorder. In DSM-5, dysphoria is deemed to be a cardinal feature of gender dysphoria and premenstrual dysphoric disorder, but such use of the term has been criticised as perpetuating the notion that dysphoria is vague and non-specific¹.

The term “dysphoria” is usually used as a synonym for sadness or subthreshold forms of depression and to describe a mixture of negative and unpleasant emotions. Thus, dysphoria seems to denote a general dissatisfaction and consists of anxiety and depression, without any specific features^{2,3}. However, these attempts to define dysphoria do no justice to the complexity of this emotional state and, in order to better understand dysphoria, it is essential to describe its fundamental characteristics: one general and three specific^{4,5}.

Results

The NDS-I demonstrated excellent internal consistency (Cronbach $\alpha = 0.949$). Factor analysis confirmed four factors related to irritability, discontent, interpersonal resentment and surrender. There were medium to strong correlations between the scores on the NDS-I and its subscales and the scores on the Beck Depression Inventory II, and weak to medium but still significant correlations with the scores on the other instruments.

Conclusions

The NDS-I has good psychometric properties, thus supporting the validity of the original scale. Further research in clinical samples is needed to test it as a tool for routine clinical practice.

Key words

Dysphoria • Cross-cultural adaptation • Psychometric properties • Borderline personality disorder

From a general point of view, dysphoria is a mood condition that is characterised by intense distress, unease, unhappiness and/or discontent and that is experienced as an uncomfortable state, devoid of an object to which it refers, difficult to articulate and permeating the whole person. In addition, dysphoria is characterised by at least three specific emotional features: *tension*, *irritability* and *urge*. *Tension* is a state of great inner pressure underlying “bad” mood, chronic and unidentifiable unhappiness and widespread and tenacious discontent, with a tendency to give up; *irritability* refers to a state of constant and annoying restlessness, worry and unceasing anxiety; *urge* is characterised by impatience and intolerance that are subsequently experienced as an irresistible need to act, often taking the form of self-injurious behaviours, typically seen in borderline patients.

From a similar perspective, Starcevic (2007)⁶ argued that “dysphoria can be conceptualized as a process, within a dynamic definition. It is [...] characterized by intense discontent and/or unhappiness and accompanied by inner tension or a ‘driven’ feeling to resort to some action to alleviate discontent or unhappiness. Outwardly, the ten-

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sion and 'drivenness' are often manifested through irritability, hostility, anger, agitation, and a tendency to blame others for one's discontent or unhappiness; the latter can sometimes reach delusional (paranoid) proportions and/or lead to aggressive behaviour" (p. 11). In order to explore the complexity of the construct of dysphoria, Berle and Starcevic (2012)⁷ developed a self-report instrument, the Nepean Dysphoria Scale (NDS), which measures the severity of dysphoria through four subscales. After initial validation⁷, the NDS was used in a clinical sample, with findings supporting a notion that dysphoria is a complex emotional state with both non-specific and specific relationships with related domains of psychopathology⁸.

The aims of this study were to highlight the process of developing the Italian version of the NDS (NDS-I) and test its psychometric properties. With good indicators of reliability and validity, the NDS-I could be used in Italy to further study the proposed conceptualisation of dysphoria.

Method

Participants

In order to replicate the original validation of the NDS, first and second year psychology students from the University of Urbino (Italy) and University of Bologna, Cesena Campus (Italy) were selected. The sample consisted of 132 students, 99 (75%) of whom were female. Their mean age was 21.44 years (SD = 4.66). After describing the study to the participants, written informed consent was obtained. The study was approved by the local ethics committees.

Measures

A total of 5 self-report instruments were administered to the participants. The key instrument was the NDS-I. The original NDS is a questionnaire developed by David Berle and Vladan Starcevic at the Sydney Medical School – Nepean, University of Sydney, Australia⁷. It consists of 24 items, which are rated for frequency on a five-point Likert scale, from 0 ("not at all") to 4 ("always"). A total score is obtained by calculating the mean of the scores on all the items. The NDS also provides separate scores on four subscales of dysphoria, as follows: *irritability*, *discontent*, *surrender* and *interpersonal resentment*. Every item (except for items 2, 4, 13 and 24) starts with the phrase: "Have you felt..." and is followed by a specific feeling (e.g., "...discontent?", "...on edge?", "...cranky?"). The validity of the NDS was tested in 134 first-year psychology students (mean age = 19.43 years) in Australia. It was administered in association with three conceptually related instruments (Beck Depression Inventory II [BDI-II], Dysfunctional Attitude Scale – Form A [DAS] and

Toronto Alexithymia Scale [TAS]) and one conceptually unrelated scale (Anxiety Sensitivity Index [ASI]). Results showed that the 24-item NDS had an excellent internal consistency (Cronbach $\alpha = 0.91$); there were medium to strong correlations between the scores on the NDS and its subscales and depressive symptoms as measured by the BDI-II (r_s 0.36 to 0.65) and weaker, but still significant, correlations with the scores on the DAS (r_s 0.21 to 0.45), TAS (r_s 0.24 to 0.38) and ASI (r_s 0.23 to 0.36)⁷.

To replicate the original validation of the NDS and examine the convergent and divergent validity of the NDS-I, Italian versions of the same instruments were administered to the Italian participants: BDI-II, DAS, TAS and the Anxiety Sensitivity Index – 3 (ASI-3, a more recent and psychometrically more sound version of the ASI). We expected strong positive correlations between scores on the NDS-I and scores on the measures of depression (BDI-II) and cognitive vulnerability to depression (DAS) because of the important conceptual links between dysphoria and depression. We also expected similar correlations between scores on the NDS-I and those on the measure of alexithymia (TAS) due to a well-documented relationship between alexithymia and depression⁹⁻¹² and conceptual overlap between emotional complexities (e.g., difficulties in emotional articulation) inherent to both dysphoria and alexithymia. In contrast, we expected weaker correlations between scores on the NDS-I and those on the ASI-3 due to a much closer relationship between predisposition to anxiety and panic as well as to anxiety disorders.

The BDI-II measures the severity of depression. This instrument consists of 21 items rated on a four-point scale from 0 to 3, according to increasing intensity. The total score is obtained by adding up item scores. The BDI-II has shown very good internal consistency (Cronbach $\alpha = 0.91-0.93$), excellent short-term test-retest reliability ($r = 0.93-0.96$) and good convergent and criterion validity¹³⁻¹⁵. The Italian version of the BDI-II has been shown to have excellent psychometric properties¹⁶.

The DAS evaluates beliefs denoting a cognitive vulnerability to depression. Originally developed by Weissman and Beck¹⁷ and consisting of 100 items, the DAS was reconfigured into two 40-item versions (i.e., DAS-A and DAS-B) by Weissman (1979; unpublished thesis). Previous research has essentially relied on the DAS-A; as a result, most research on the psychometric properties of the DAS has been conducted with the DAS-A¹⁸. Each item is rated on a seven-point Likert scale (7 = fully agree; 1 = fully disagree) and total score is the sum of the scores on each item. It has been shown that the DAS-A has excellent internal consistency (Cronbach $\alpha = 0.89-0.94$), good six-week test-retest reliability ($r = 0.73$) and adequate convergent and divergent validity^{19 20}. The Italian version of the DAS-A differs from the original in terms of

the items being rated on a five-point Likert scale (5 = fully agree; 1 = fully disagree); it has also demonstrated very good psychometric properties²¹.

The TAS consists of 20 items that assess the difficulties in the awareness and identification of emotions. Subjects respond on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Factor analysis of the TAS revealed three factors: 1) difficulty in identifying feelings; 2) difficulty in describing feelings; 3) externally oriented thinking. The TAS has demonstrated good internal consistency (Cronbach $\alpha = 0.79-0.82$) and adequate three-week ($r = 0.77$) and three-month ($r = 0.74$) test-retest-reliability; it has also proved to have good levels of convergent, divergent and concurrent validity²²⁻²⁴. The Italian version of the TAS was reported to have very good psychometric properties²⁵.

The ASI-3 contains 18 items and measures the fear of anxiety-related symptoms. Each item is rated on a five-point Likert scale from 0 (very little) to 4 (very much) and total score is obtained by adding up item scores. Confirmatory factor analysis revealed a three-factor model: physical, social and cognitive concerns²⁶. The factorial validity of the ASI-3 was stronger than that of the original ASI. Cronbach's alpha values for each of the ASI-3 subscales ranged between acceptable and good (the range for physical concerns was 0.73-0.90, for cognitive concerns it was 0.77-0.93 and for social concerns the range was 0.69-0.89)²⁶. Studies also suggest very good convergent, divergent and criterion validity of the ASI-3²⁶. The Italian version of the ASI-3 has shown excellent psychometric properties²⁷.

Procedure involving the translation and validation of the NDS

This was a two-stage procedure. Stage 1 involved the Italian translation and cross-cultural adaptation of the NDS. Stage 2 was a preliminary validation of the NDS-I.

Stage 1. Translation and cross-cultural adaptation

The NDS was translated into Italian and subjected to a cross-cultural adaptation process, according to the standard guidelines for self-report measures²⁸. At the beginning, two translators with the target language (Italian) as their mother tongue translated the NDS from the original language (English) to the target language (*forward translation*). The two translators had different profiles: one with a background in clinical psychology to ensure equivalence from a measurement perspective, the other with no background in clinical psychology to ensure equivalence from a semantic perspective. The translators worked independently of each other, writing down ambiguous phrases or uncertain meanings and producing two different Italian versions of the NDS: T1 and T2.

Subsequently, the two translators compared their translations with the goal of reaching a consensus (in the presence of an observer). A synthesis of T1 and T2 was produced and one joint translation was created: T-12 (*synthesis of the translations*).

Completely blind to the original NDS, two translators with the original language (English) as their mother tongue translated the T-12 back into English (*backward translation*). The two translators were not aware of the concepts examined by the questionnaire, and their background was not in clinical psychology. Again, the translators worked independently from each other, highlighting conceptual errors or unclear words in the T-12 and producing two different English versions: BT1 and BT2.

Next, an expert committee, composed of psychiatrists, clinical psychologists, methodologists, language professionals and translators involved in the cross-cultural adaptation process (forward and backward translators), revised all the materials produced (T1, T2, T-12, BT1, BT2) to achieve semantic, idiomatic, experiential and conceptual equivalence between the source and target versions, thus creating a pre-final version of the translation (*expert committee review*).

A pre-final version was then administered to a group of 34 second-year psychology students (mean age = 21.91 years) of the University of Urbino, Italy (*pre-testing*). Students were also asked to write comments on comprehensibility and clarity of items and provide any suggestions for improving item presentation.

Finally, after a careful consideration of the comments made by the students during pretesting, the final version was created (NDS-I) and submitted to the authors of the NDS for final approval (*final appraisal*).

Stage 2. Establishing psychometric properties

Analysis of the psychometric properties of the NDS-I first entailed use of a parallel analysis with the syntax of O'Connor²⁹ rather than the Kaiser's criterion (eigenvalues > 1) or Scree plot method. This procedure has been chosen for two reasons. First, we intended to replicate the process used in the original validation of the NDS. Secondly, there are significant limitations of Kaiser's criterion and Scree plot method³⁰⁻³².

In order to decide how many factors to retain, a parallel analysis was conducted through a syntax program called "rawpar.sps" that runs on SPSS software. This procedure extracts eigenvalues from random data sets based on the number of cases and variables, and these are then compared with the actual eigenvalues derived from a regular factor analysis²⁹. A good practice is to specify the desired percentile (usually 95th) and the number of random data sets. Factors or components that are to be retained (i.e., the eigenvalues derived from actual data) should

be greater than the eigenvalues from random data at the 95th percentile, based on the number of random data sets generated²⁹.

In the SPSS syntax for parallel analysis, the number of cases (i.e., 132 in our sample), the number of variables (i.e., 24 items of the NDS), the number of random data sets generated (100) and the percentile (95) were then entered. Subsequently, the factor analysis was repeated with the principal axis factoring solution, promax rotation and the number of factors constrained to four. A value of at least 0.3 was set as the criterion for factor loading.

Item-total correlations and the coefficient of internal consistency (Cronbach's α value) for the whole NDS-I and for each factor were also calculated. Convergent and divergent validity of the NDS-I were examined by means of Pearson's parametric and Spearman-Brown non-parametric correlations between the scores on the NDS-I and its subscales and scores on the other self-report instruments. All statistical analyses were conducted using SPSS for Windows, version 19.0.

Results

Cross-cultural adaptation process

Some difficulties emerged during the cross-cultural adaptation process that were mainly due to the colloquial nature of certain items. In fact, during the forward translation the translators did not agree on two NDS items, so in both cases a clarification by the authors of the NDS was necessary. Item 3 ("Have you felt that others have messed up things for you") was translated in two ways: with a phrase indicating a relatively benign meaning (corresponding to "complicating things") and with a phrase indicating a more serious meaning (corresponding to "spoiling everything"). The authors of the NDS clarified that the meaning of the item was neither catastrophic nor too "mild", but rather that it pertained to a sense of being prevented from doing something important in life or from just moving on with life because of the actions taken by others. Therefore, the translators agreed to translate item 3 with a phrase indicating a more "intermediate" meaning (corresponding to "blowing up things"). Item 21 ("Have you felt miserable?") was also translated in two ways: with an adjective indicating a generic meaning (corresponding to "wretched") and with an adjective indicating a specific meaning – in use in Scotland, Australia and New Zealand (corresponding to "mean/stingy"). The authors of the NDS clarified that the meaning of the item broadly corresponded to profound emotional suffering, distress and/or unhappiness and the translators agreed to translate it with an adjective indicating a more shared meaning (corresponding to "depressed").

Similar issues emerged during pretesting. In fact, in the

final comments many subjects pointed out that item 2 ("Have things got the better of you?") was not clear. So, a change in the phrase was needed, but in order to avoid interpretation of the item that would be semantically too far from the original, a clarification was requested again. The authors of the NDS proposed the following examples in English as a substitute for item 2: "Have you felt that people or responsibilities wore you out (or over-ran you, exhausted you or used up all of your energy and resources)?", "Have you felt like you have nothing left to offer?" (or "Have you felt like you have nothing left to offer because you were exhausted by 'things' in your life?") and "Have you felt that coping with ordinary things is too hard?". The translators carefully evaluated the alternatives, and agreed not to change the colloquial form "get the better of" (also in use in Italy and equally effective), but replace "things" with a more specific wording (corresponding to "events of life"). Moreover, some participants suggested that item 21 lacked clarity and emphasised that the adjective "depressed" had become too popular in the contemporary language and had lost its depth in clinical terms. The translators took this into account, but decided this time not to change anything in the translation, because any alternative adjective would not have the same broad meaning of the original wording ("miserable").

Factor analysis

Our study confirmed the results of the original parallel analysis, i.e., we also found that the first four eigenvalues derived from actual data of the factor analysis were greater than the first four 95th percentile random data eigenvalues. Therefore, four factors were retained. Subsequently, factor analysis was carried out again with the number of factors forced to four: the residual correlation matrix revealed that four-factor solution was appropriate. The pattern matrix showed cross loadings with small differences (less than 0.1) between loadings on each factor for two items: item 4 ("Has it been hard to relax?") had loadings of 0.36 and 0.42 on the first and second factors, respectively, while item 8 ("Have you felt as if nothing seemed right?") had loadings of 0.37 and 0.43 on the second and fourth factors, respectively. The two items were assigned to the factors with higher loadings, as their removal changed internal consistency of the total scale only minimally (i.e., Cronbach alpha for the full, 24-item NDS-I was 0.949, it was 0.948 when item 4 was removed and 0.946 when item 8 was removed). This is in accordance with the item-analysis criterion for item retention/deletion stipulated in the recommendations for best practices in using exploratory factor analysis in scale development³³.

Item means, standard deviations, item-total score correlations and pattern matrix of the principal axis factoring so-

lution are reported in Table I. The proportion of variance accounted for by the four-factor solution was greater for the NDS-I (58.63%) than it was for the NDS (46.57%). However, unlike the NDS, more variance in the NDS-I was accounted for by the factor “interpersonal resentment” than by the factor “surrender”. The four factors corresponded to the subscales of the NDS-I and components of dysphoria. Correlations among the NDS-I factors reported in Table

II were strong and ranged between 0.57 and 0.70. This suggests that factors are representative of the underlying construct (dysphoria).

Comparisons between factor structures of the NDS-I and NDS showed that 15 (62.5%) scale items loaded on the same factors in the two studies (“common items”). Among these, 7 loaded on factor 1 (“Irritability”), 4 loaded on factor 3 (“Interpersonal Resentment”), 3 loaded on factor 2 (“Discontent”) and 1 loaded on factor 4

TABLE I.

Item means, standard deviations, item-total score correlations and pattern matrix of principal axis factoring solution with Promax rotation constrained to four factors.

	Mean	SD	Item-total score correlation	Factor*			
				1	2	3	4
Proportion of variance accounted for (%)				45.45	6.26	4.19	2.73
13. Have you been losing your temper?	0.89	0.95	0.50	0.85			
16. Have you felt cranky?	1.86	1.03	0.68	0.78			
11. Have you felt on edge?	1.80	1.18	0.71	0.74			
7. Have you felt that you might lose control and hit someone?	0.84	1.17	0.60	0.66			
18. Have you been feeling angry towards other people?	1.37	1.10	0.64	0.62		0.44	
20. Have you felt easily annoyed by what others say or do?	1.80	1.07	0.62	0.56			
14. Have you felt that everything was too much?	1.27	1.18	0.80	0.55			
24. Has everything been getting on your nerves?	1.06	1.05	0.73	0.53			
5. Have you felt impatient with other people?	1.59	1.22	0.56	0.43		0.30	
1. Have you felt discontent?	1.52	0.92	0.54		0.96		
19. Have you felt unhappy?	1.42	1.07	0.70		0.76		
21. Have you felt miserable?	1.26	1.04	0.74		0.75		
2. Have things got the better of you?	1.17	1.03	0.53		0.52		
22. Have you felt overwhelmed by life?	0.95	1.13	0.74		0.52		0.36
4. Has it been hard to relax?	1.98	1.19	0.63	0.36	0.43		
23. Have you felt that people are against you?	0.88	1.02	0.65			0.81	
9. Have you felt that people shouldn't be trusted?	1.63	1.17	0.54			0.81	
15. Have you felt that people are not fair towards you?	1.11	1.02	0.77			0.72	
3. Have you felt others have messed up things for you?	1.03	1.07	0.50			0.62	
12. Have you felt that people don't care about you?	1.20	1.12	0.70			0.54	
10. Have you felt like giving up?	1.02	1.19	0.69				0.96
17. Have you felt like you couldn't cope anymore?	1.16	1.12	0.75				0.57
8. Have you felt as if nothing seemed right?	1.42	1.17	0.78		0.37		0.43
6. Have you felt that you achieved nothing?	1.64	1.17	0.55				0.41
Cronbach α value				0.90	0.87	0.85	0.86
Mean				1.39	1.38	1.17	1.31

* Factor loadings of at least 0.30 are reported.

Factor 1: “Irritability”; **Factor 2:** “Discontent”; **Factor 3:** “Interpersonal resentment”; **Factor 4:** “Surrender”.
Total scale Cronbach α = 0.949; total scale mean = 1.19, SD = 0.68.

("Surrender") in both studies. Common items constituted 80% of Interpersonal Resentment items, 78% of Irritability items, 50% of Discontent items and 25% of Surrender items in the NDS-I.

Other psychometric properties

The Cronbach α value for the full 24-item NDS-I was 0.949, while it was 0.904 for the first, 0.868 for the second, 0.851 for the third and 0.865 for the fourth factor, respectively. These values demonstrate an excellent internal consistency (Table I). Item-total score correlations (Table I) were all adequate, since they were above the usual cut-off of 0.30 (the lowest value was 0.50), suggesting that all items of the NDS-I are related with the content of the whole scale ³⁴.

The correlations between scores on the NDS-I and its subscales and scores on the other self-report instruments are reported in Table III. All correlation coefficients were statistically significant. The NDS-I total score and scores on its subscales showed medium to strong correlations with BDI-II scores (r s ranging from 0.51 to 0.67). The correlations with TAS-20 total scores (r s ranging between 0.38 and 0.49), DAS scores (r s ranging between 0.21 and 0.36) and ASI-3 scores (r s ranging between 0.32 and 0.43) were weaker, but still noteworthy.

The final version of the NDS-I consists of 24 items, which are rated for frequency over a 1-week period preceding its administration on a five-point Likert scale, from 0 to 4. As in the NDS, a brief guide is provided to standardise responses: score 0 means "not at all"; score 1 denotes occasional frequency defined as "1 day for up to 3-4 hours"; score 2 corresponds to "often", defined as "up to 4 days for up to 3-4 hours"; score 3 means "very often" or a frequency of "every day for up to 3-4 hours"; score 4 denotes "always" or "every day, most of the time". Total score is calculated by determining the mean of the scores on all the items. Like the NDS, the NDS-I provides separate scores on four subscales, which are also the main components of dysphoria, i.e., irritability, discontent, interpersonal resentment and surrender.

Discussion

We have described the process of translating the NDS into Italian to create the NDS-I. This process was in accordance with the cross-cultural adaptation principles and involved several stages. We have shown how to successfully address the problems and complexities arising in the course of translating instruments for use in mental health research, which is one of the strengths of the present study and has implications for similar endeavours by other research teams working cross-nationally. In the sample of Italian university students, the NDS-I

had a 4-factor structure, similar to the structure reported for the NDS. This is noteworthy, considering the cultural differences between Italy and the country in which the NDS was developed (Australia). In addition, the factors identified are consistent with the theoretical concepts of dysphoria proposed by Starcevic (2007) ⁶ and Rossi Monti (2012) ⁴. With regards to the scale items and factors, the greatest concordance between the NDS-I and NDS was for "Interpersonal Resentment" and "Irritability", followed by "Discontent". This suggests that these factors might be the core elements of dysphoria and that its externalising components (interpersonal resentment and irritability) might be more conceptually sound. Lower concordance rates between the NDS-I and NDS for internalising aspects of dysphoria (discontent and surrender) call for scale refinement, but they do not necessarily undermine the internal coherence of the NDS-I and conceptual validity of dysphoria because of the strong correlations between all NDS-I factors (Table II).

The NDS-I was found to have an excellent internal consistency (total scale Cronbach α = 0.949), similar to that reported for the NDS (total scale Cronbach α = 0.91). In addition, moderate to strong item-total scale correlations for all scale items suggest that the NDS-I, like the NDS, is conceptually coherent.

The strength of the correlations between the scores on the NDS-I and its subscales and the scores on the BDI-II, TAS and DAS indicates convergent validity of the NDS-I. The strongest correlations were between the scores on the NDS-I and its subscales and the scores on the BDI-II, suggesting that dysphoria is related to the symptoms of depression, but not identical with the concept of depression. The weaker but still significant correlations between the scores on the NDS-I and its subscales and the scores on the ASI-3 are in accordance with our expectation, but they do not support a clear differentiation between dysphoria and anxiety. This suggests the need to include other anxiety measures in further studies of the psychometric properties of the NDS to better delineate the relationship between dysphoria and anxiety. For example, Starcevic et al.'s most recent study (2015) ⁸ revealed a significant pre-

TABLE II.
Factor correlation matrix of the Nepean Dysphoria Scale, Italian version (NDS-I).

Factor	1	2	3	4
1. Irritability	1.00	0.62	0.68	0.60
2. Discontent		1.00	0.64	0.70
3. Interpersonal resentment			1.00	0.57
4. Surrender				1.00

TABLE III.

Correlations between scores on the NDS-I and its subscales and scores on other measures.

		Pearson's Correlations								
		1.	2.	3.	4.	5.	6.	7.	8.	9.
Spearman-Brown Correlations	1. NDS-I Irritability	1	0.68 [†]	0.75 [†]	0.65 [†]	0.90 [†]	0.37 [†]	0.65 [†]	0.21 [*]	0.41 [†]
	2. NDS-I Discontent	0.68 [†]	1	0.70 [†]	0.77 [†]	0.89 [†]	0.39 [†]	0.59 [†]	0.34 [†]	0.44 [†]
	3. NDS-I Interpersonal resentment	0.76 [†]	0.68 [†]	1	0.63 [†]	0.88 [†]	0.38 [†]	0.53 [†]	0.26 [†]	0.38 [†]
	4. NDS-I Surrender	0.62 [†]	0.75 [†]	0.62 [†]	1	0.82 [†]	0.32 [†]	0.64 [†]	0.36 [†]	0.40 [†]
	5. NDS total score	0.90 [†]	0.88 [†]	0.87 [†]	0.79 [†]	1	0.43 [†]	0.68 [†]	0.32 [†]	0.47 [†]
	6. ASI-3	0.36 [†]	0.42 [†]	0.37 [†]	0.33 [†]	0.43 [†]	1	0.46 [†]	0.56 [†]	0.56 [†]
	7. BDI-II	0.60 [†]	0.63 [†]	0.51 [†]	0.62 [†]	0.67 [†]	0.44 [†]	1	0.45 [†]	0.51 [†]
	8. DAS	0.21 [*]	0.31 [†]	0.22 [*]	0.31 [†]	0.30 [†]	0.51 [†]	0.36 [†]	1	0.41 [†]
	9. TAS – total score	0.40 [†]	0.46 [†]	0.38 [†]	0.41 [†]	0.48 [†]	0.58 [†]	0.48 [†]	0.37 [†]	1

* $p < 0.05$; [†] $p < 0.01$.

Pearson's correlations are above the diagonal, Spearman-Brown correlations are below the diagonal.

NDS-I: Nepean Dysphoria Scale, Italian version; ASI-3: Anxiety Sensitivity Index – 3; BDI-II: Beck Depression Inventory II; DAS: Dysfunctional Attitude Scale – Form A; TAS: Toronto Alexithymia Scale (20-item version).

dictive relationship between the somatic and cognitive negative effects of anxiety and the “Discontent” factor. This is a further evidence of the usefulness of confirmatory analysis of the NDS-I scale.

This study has a number of limitations. Firstly, our sample was non-clinical, which limits generalisations of the findings and their applicability to clinical populations. Therefore, there is a need to further validate the NDS-I in treatment-seeking individuals with a variety of conditions (e.g., borderline personality disorder, depressive disorders, bipolar disorders, posttraumatic stress disorder, generalised anxiety disorder and psychotic disorders) in which dysphoria has been hypothesised to play a role. Secondly, considering that test-retest reliability and divergent validity of the NDS-I have not been examined and confirmed, the NDS-I should undergo further testing of its psychometric properties.

In conclusion, the NDS was carefully translated into Italian and preliminary validation of the NDS-I replicated to a large extent the results of the preliminary validation of the NDS. This confirms solid psychometric properties of the instrument and allows use of the NDS-I in Italy to measure the severity of dysphoria. The adoption of the NDS/NDS-I is expected to improve understanding of the construct of dysphoria, but there is still a need for further studies of the NDS-I in clinical samples similar to the clinical investigation already performed with the NDS⁸.

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Conflicts of interest

None.

References

- Starcevic V, Rossi Monti M, D'Agostino A, et al. *Will DSM-5 make us feel dysphoric? Conceptualisation(s) of dysphoria in the most recent classification of mental disorders*. Aust NZ J Psychiatr 2013;47:954-5.
- Voruganti LP, Awad AG. *Is neuroleptic dysphoria a variant of drug-induced extrapyramidal side effects?* Can J Psychiatry 2004;49:285-9.
- Cella M, Cooper A, Dymond SO, et al. *The relationship between dysphoria and proneness to hallucination and delusions among young adults*. Compr Psychiatr 2008;49:544-50.
- Rossi Monti M. *Borderline: il dramma della disforia*. In: Rossi Monti M, editor. *Psicopatologia del presente. Crisi della nosografia e nuove forme della clinica*. Milano: FrancoAngeli 2012, pp. 15-63.
- Rossi Monti M, D'Agostino A. *Borderline personality disorder from a psychopathological-dynamic perspective*. J Psychopathol 2014;20:451-60.
- Starcevic V. *Dysphoric about dysphoria: towards a greater conceptual clarity of the term*. Australas Psychiatry 2007;15:9-13.
- Berle D, Starcevic V. *Preliminary validation of the Nepean Dysphoria Scale*. Australas Psychiatry 2012;20:322-6.

- 8 Starcevic V, Berle D, Kirupamani V, et al. *Specificity of the relationships between dysphoria and related constructs in an outpatient sample*. *Psychiatr Q* 2015;86:459-469
- 9 Hendryx MS, Haviland MG, Shaw DG. *Dimensions of alexithymia and their relationship to anxiety and depression*. *J Pers Assess* 1991;56:227-37.
- 10 Honkalampi K, Hintikka J, Tanskanen A, et al. *Depression is strongly associated with alexithymia in the general population*. *J Psychosom Res* 2000;48:99-104.
- 11 Marchesi C, Bertoni S, Cantoni A, et al. *Is alexithymia a personality trait increasing the risk of depression? A prospective study evaluating alexithymia before, during and after a depressive episode*. *Psychol Med* 2008;12:1717-22.
- 12 Ogrodniczuk JS, Piper WE, Joyce AS. *Alexithymia as a predictor of residual symptoms in depressed patients who respond to short-term psychotherapy*. *Am J Psychother* 2004;58:150-61.
- 13 Beck AT, Steer RA, Brown GK. *Beck Depression Inventory manual*. 2nd ed. San Antonio, TX: Psychological Corporation 1996.
- 14 Dozois DJA, Dobson KS, Anhang JL. *A psychometric evaluation of the Beck Depression Inventory-II*. *Psychol Assessment* 1998;10:83-9.
- 15 Sprinkle SD, Lurie D, Insko SL, et al. *Criterion validity, severity cut scores, and test-retest reliability of the Beck Depression Inventory-II in a university counseling center sample*. *J Couns Psychol* 2002;49:381-5.
- 16 Ghisi M, Flebus GB, Sanavio E, et al. *Beck Depression Inventory-II. Adattamento italiano: Manuale*. Firenze: Giunti OS 2006.
- 17 Weissman AN, Beck AT. *Development and validation of the Dysfunctional Attitude Scale*. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Chicago, IL 1978.
- 18 De Graaf LE, Roelof J, Huibers MJH. *Measuring dysfunctional attitudes in the general population: the Dysfunctional Attitude Scale (form A) revised*. *Cognitive Ther Res* 2009;33:345-55.
- 19 Oliver JM, Baumgart EP. *The Dysfunctional Attitude Scale: psychometric properties and relation to depression in an unselected adult population*. *Cognitive Ther Res* 1985;9:161-7.
- 20 Nelson LD, Stern LS, Cicchetti DC. *The Dysfunctional Attitude Scale: how well can it measure depressive thinking?* *J Psychopathol Behav* 1992;14:217-23.
- 21 Di Maria F, Di Nuovo S. *Ideazioni disfunzionali e disagio psichico: una ricerca con la Dysfunctional Attitudes Scale di Beck e Weissmann*. *Archivio di Psicologia, Neurologia e Psichiatria* 1991;52:233-49.
- 22 Bagby RM, Parker JDA, Taylor GJ. *The twenty-item Toronto Alexithymia Scale – I. Item selection and cross-validation of the factor structure*. *J Psychosom Res* 1994;38:23-32.
- 23 Bagby RM, Taylor GJ, Parker JDA. *The twenty-item Toronto Alexithymia Scale – II. Convergent, discriminant and concurrent validity*. *J Psychosom Res* 1994;38:33-40.
- 24 Kooiman CG, Spinhoven P, Trijsburg RW. *The assessment of alexithymia: a critical review of the literature and psychometric study of the Toronto Alexithymia Scale-20*. *J Psychosom Res* 2002;53:1083-90.
- 25 Bressi C, Taylor GJ, Parker J, et al. *Cross validation of the factor structure of the 20-item Toronto Alexithymia Scale: an Italian multicenter study*. *J Psychosom Res* 1996;41:551-9.
- 26 Taylor S, Zvolensky MJ, Cox BJ, et al. *Robust dimensions of anxiety sensitivity: development and initial validation of the Anxiety Sensitivity Index-3 (ASI-3)*. *Psychol Assessment* 2007;19:176-88.
- 27 Petrocchi N, Tenore K, Couyoumdjian A, et al. *The Anxiety Sensitivity Index-3: factor structure and psychometric properties in Italian clinical and non-clinical samples*. *Boll Psicol Appl* 2014;269:53-64.
- 28 Beaton DE, Bombardier C, Guillemin F, et al. *Guidelines for the process of cross-cultural adaptation of self-report measures*. *Spine* 2000;25:3186-91.
- 29 O'Connor BP. *SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test*. *Behav Res Meth Instr Comput* 2000;32:396-402.
- 30 Cattell RB. *The Scree test for the number of factors*. *Multivar Behav Res* 1966;1:245-76.
- 31 Streiner DL. *Factors affecting reliability of interpretation of Scree plots*. *Psychol Rep* 1998;83:687-94.
- 32 Gorsuch RL. *Factor analysis*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum 1983.
- 33 Worthington RL, Whittaker TA. *Scale development research: a content analysis and recommendations for best practices*. *Couns Psychol* 2006;34:806-38.
- 34 Nunnally JC, Bernstein IH. *Psychometric theory*. 3rd ed. New York, NY: McGraw-Hill Humanities/Social Sciences/Languages 1994.