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Re-refining the measurement of distress intolerance

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ABSTRACT

The current study aims to present a parsimonious measure of five factors of distress intolerance as proposed by Zvolensky et al. (2010). Exploratory (n = 511) and confirmatory (n = 157) factor analytic studies of items from five established measures of distress intolerance suggest a 20-item measure representing five dimensions of distress intolerance (uncertainty, ambiguity, physical discomfort, frustration, and negative emotion). A comparison of latent factor models suggests that a bifactor model may present the best fit to the data, reflecting the identification of a general factor of distress intolerance while also recognizing the multidimensionality of the five group factors. The current findings suggest a parsimonious measure of five factors of distress intolerance, though further research may consider method and measurement biases and the convergent and discriminant validity of the subscales.

1. Introduction

Given the plethora of measures that have been used to assess distress intolerance (either through distress intolerance or distress tolerance, and subsequently in this paper simply referred to as distress intolerance), there have been attempts recently to refine its measurement. McHugh and Otto (2012) were the first to comprehensively synthesize a number of distress intolerance measures. They tested whether distress intolerance is comprised of a single construct by analysing the latent factor structure of four measures, including the Anxiety Sensitivity Index (Peterson & Reiss, 1992), the Frustration Discomfort Scale (FDS; Harrington, 2005), the Discomfort Intolerance Scale (DIS; Schmidt, Richey, & Fitzpatrick, 2006), and the Distress Tolerance Scale (DTS; Simons & Gaher, 2005). Factor analysis of the subscales scores supported a single-factor latent structure. Furthermore, McHugh and Otto (2012) identified 10 items from the subscales that had the highest degree of concordance with the latent structure. They proposed that these items could be used as an unidimensional measure of distress intolerance.

Bardeen, Fergus, and Orcutt (2013) employed eight indices of distress intolerance to assess the latter's measurement in line with Zvolensky, Vujanovic, Bernstein, and Leyro's (2010) summary of the distress intolerance measurement literature, which explores different measures of distress intolerance that have been presented in the literature. The summary suggests that the distress intolerance construct is represented by five distress intolerance constructs: uncertainty, ambiguity, physical discomfort, frustration, and negative emotion. Bardeen et al. confirmed this summary based on a factor analysis of scores from subscales derived from the Intolerance of Uncertainty Index-Part A (Carleton, Gosselin, & Asmundson, 2010), the Intolerance of Uncertainty Scale (Buhr & Dugas, 2002), the Multiple Stimulus Types Ambiguity Tolerance-I (McLain, 1993), the Tolerance of Ambiguity Scale-12 (Herman, Stevens, Bird, Mendenhall, & Oddou, 2010, a revised version of Budner's (1962) 16-item version), the Somatosensory Amplification Scale (Barsky, Wyshak, & Klerman, 1990), the DIS (Schmidt et al., 2006), the FDS (Harrington, 2005), and the DTS (Simons & Gaher, 2005).

The present study integrates the approaches employed by McHugh and Otto (2012) and Bardeen et al. (2013). McHugh and Otto (2012) provide a parsimonious 10-item unidimensional measure of distress intolerance. Bardeen et al. (2013) provide evidence that distress intolerance comprises five factors. However, the existing literature does not suggest a parsimonious measure that also measures the five factors of distress intolerance. In this study, we aimed to identify individual items from the measures employed by McHugh and Otto (2012) and Bardeen et al. (2013) so that we could measure distress intolerance in terms of its lower-order constructs (uncertainty, ambiguity, physical discomfort, frustration, and negative emotion).

2. Method

2.1. Samples

Two samples of data were collected. Sample 1 was used for an exploratory factor analysis (EFA) and Sample 2 for a confirmatory factor analysis (CFA).

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The first sample comprised 511 respondents (82 males, 429 females) who were either undergraduates or postgraduates enrolled on university courses over a two-year period. The participants ranged in age from 18 to 36 years (M = 19.77, SD = 2.40 years). They were predominantly of a white ethnicity (60.7%, with 12.3% and 11.4% reporting to be black and South Asian respectively).

The second sample allowed us to test whether the findings from the first sample were replicated in a non-student population. The second sample comprised 157 older adults (45 males and 112 females) aged from 18 to 58 years (M = 27.55, SD = 7.9 years). These participants were also predominantly white (72.6%, with Asian being the next highest reported ethnicity) and single (46.5%, with 45.9% living as married), with the most commonly reported occupations being sales/marketing/advertisting (14.6%) or computer-related (10.8%). The recruitment procedure combined opportunistic and snowball sampling, with social networking sites used firstly to contact participants, who were then asked to forward details of the study to acquaintances. Fourteen respondents were removed from the analysis because they were students, and 22 respondents did not complete the survey.

3. Materials

Across their two studies, McHugh and Otto (2012) and Bardeen et al. (2013) employed nine scales, three of which featured in both studies. In choosing candidates from these nine scales for the current study we aimed to (a) have as much overlap as possible with the two previous studies, (b) obtain a five-factor structure of distress intolerance, (c) administer a number of items that were not too arduous for respondents to complete, and (d) facilitate an adequate item-to-respondent ratio. The respondents in Sample 1 were asked to complete five distress intolerance scales.

3.1. The Intolerance of Uncertainty Scale

IUS (Buhr & Dugas, 2002) was used to measure 'uncertainty' distress intolerance. The IUS comprises 27 items used to assess emotional, cognitive, and behavioural responses to ambiguous stimuli, the consequences of being uncertain, and endeavours to control the future. Responses are scored on a five-point scale ranging from 1 (*not at all characteristic of me*) to 5 (*entirely characteristic of me*).

3.2. The Tolerance of Ambiguity Scale

TAS (Budner, 1962) was used to measure the 'ambiguity' distress intolerance. The TAS comprises 16 items used to assess an individual's tendency to perceive ambiguous situations as desirable. It consists of three subscales: novelty, complexity, and insolubility. Responses are scored on a seven-point scale ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). Though Bardeen et al. (2013) used a shortened version of this scale, we employed all the items to provide a further full range of items from which to consider 'ambiguity' distress intolerance.

3.3. The Discomfort Intolerance Scale

DIS (Schmidt et al., 2006) was used to measure the 'physical discomfort' distress intolerance. The DIS comprises five items (from an original proposed seven items) that assess a person's ability to withstand uncomfortable physical sensations via intolerance of discomfort or pain and avoidance of physical discomfort. Responses are scored on a seven-point scale ranging from 0 (*not at all like me*) to 6 (*extremely like me*). We administered all the original seven items devised by Schmidt et al. (2006) to provide a full consideration of 'physical discomfort' distress intolerance.

3.4. The Frustration Discomfort Scale

FDS (Harrington, 2005) was used to measure 'frustration' distress intolerance. The FDS comprises 35 items (with 7 items forming separate gratification and fairness subscales) used to measure a person's ability to tolerate discomfort, their emotional intolerance, and their ability to tolerate achievement frustration discomfort. Responses are scored on a five-point scale ranging from 0 (*absent*) to 4 (*very strong*).

3.5. The Distress Tolerance Scale

DTS (Simons & Gaher, 2005) was used to measure 'negative emotion' distress intolerance. The DTS comprises 15 items used to assess an individual's ability to withstand emotional distress via tolerance, appraisal, absorption, and regulation. Responses are scored on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The participants in Sample 2 were asked to complete 20 items that we deemed suitable for measuring distress intolerance following the EFA that is outlined below. A change was made to standardize the response format to a seven-point scale with the following responses: 1 (*strongly disagree*) to 7 (*strongly agree*).

3.6. Procedure

For both surveys, questionnaires were completed via an electronic survey system that was set up in such a way that the respondents had to answer all of the questions. For Sample 1, the software allowed the order of the administration of the scales to be randomized.

3.7. Ethical consent

The study procedure received ethical approval from an University Ethics Board.

4. Results

4.1. Exploratory factor analysis

The first step of the analysis was to determine the factor structure of the items, using EFA to allow any such structure to emerge. The number of participants (511) to variables (100) ratio exceeded the recommended minimum ratio for EFA of 5 to 1 (with a minimum number of participants of 150) (Gorsuch, 1983). All items were subjected to maximum likelihood analysis (Kaiser–Meyer–Olkin measure of sampling adequacy = .91; Bartlett's test of sphericity, x^2 = 24000.39, df = 4950, p < .001).

The decision as to the number of factors to retain is crucial when carrying out EFA; this can be based on the K1 method (eigenvalues greater than one; Kaiser, 1960), a scree plot (Cattell, 1966), and/or a parallel analysis of Monte Carlo simulations (Horn, 1965). Reports have suggested that parallel analysis is the most accurate method for determining the number of factors, demonstrating the least variability and comparing favourably to the other methods (Ledesma & Valero-Mora, 2007). Therefore, parallel analysis was used as the definitive guide. The ninth eigenvalue obtained using a maximum likelihood extraction (18.95, 6.40, 4.87, 4.21, 3.15, 2.75, 2.11, 1.83, and 1.63) failed to exceed the ninth eigenvalue from the parallel analysis (2.03, 1.96, 1.91, 1.86, 1.83, 1.79, 1.76,