Revisiting the fundamental fears: Towards establishing construct independence

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ABSTRACT

Reiss (1991) described three "fundamental" fears-anxiety sensitivity, fear of negative evaluation, and injury/illness sensitivity-as distinct individual differences underlying fearful reactions. Taylor (1993) evidenced the distinctions, but the results have not been replicated despite developments in theory and measures. Intolerance of uncertainty and pain-related anxiety have since been posited as similarly important, but not established as distinct. The present investigation assessed for the distinctions (1) utilizing contemporary measures; (2) included intolerance of uncertainty and pain-related anxiety; and (3) employed a stringent process for assessing independence. Undergraduates and community members ($n = 993$; 71% women) randomly completed questionnaires assessing the constructs, with a "standard" format (i.e., each construct assessed as a grouped set of items) or a "random" format (i.e., items from all constructs randomly interspersed). The undergraduates ($n = 254$; 76% women) also provided data for two-week test–retest reliability. Factor analyses and test–retest reliability supported construct independence and stability across presentation formats. Comprehensive results, limitations, and directions for future research are discussed.

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1. Introduction

Anxiety sensitivity (AS), fear of negative evaluation (FNE), and injury/illness sensitivity (IIS) are long-standing constructs posited as individual differences that contribute substantially to anxiety-related psychopathologies (Reiss, 1991). Each construct purportedly represents distinct, inherent pre-disposition underlying reactions to common situations (e.g., fear of flying; (Taylor, 1993). AS is the propensity to catastrophically appraise anxiety sensations associated with physical, mental, and social consequences (Taylor, 1999). AS has contributed to contemporary models for several complex symptom profiles (Olatunji & Wolitzky-Taylor, 2009). FNE is apprehension about being evaluated and is a hallmark of social anxiety (Heimberg, Brozovich, & Rapee, 2010). IIS is the fear of physical harm (Carleton, Asmundson, & Taylor, 2005), studied in the context of specific phobias (e.g., fear of being injured by an animal) and chronic pain (Thibodeau, Fetzner, Carleton, Kachur, & Asmundson, 2013).

Taylor (1993) published the first attempt to assess Reiss (1991) hypothesis that AS, FNE, and IIS represent distinct constructs. Participants completed contemporary measures of each construct, each of which was demonstrated as distinct with exploratory factor analyses (EFAs). Subsequent studies have furthered work by Taylor and Reiss, exploring distinctions between the fundamental fears and other constructs, including intolerance of uncertainty (IU) and pain-related anxiety. Indeed, IU appears crucial for anxiety-related psychopathology (Carleton, 2012), distinct from AS (Carleton, Sharpe, & Asmundson, 2007), and fits Reiss (1991) original fundamental fear criteria (Carleton, 2012). Similarly, pain-related anxiety appears to represent an independent fundamental fear (Carleton, Abrams, Asmundson, Antony, & McCabe, 2009), facilitating chronic pain (Asmundson, Vlaeyen, & Crombez, 2004); however, pain-related anxiety may be only a manifestation of AS (Greenberg & Burns, 2003).

Taylor's (1993) findings have guided research and contemporary theory in several areas; however, there are reasons to re-examine his results. First, Taylor's results have not been replicated. Second, the typical grouping of items in the form of questionnaires (i.e., items presumed to be related presented serially in groups) may have incidentally inflated estimations of construct independence. Third, the measures assessing each construct have since

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been revised. Fourth, construct independence for IU and pain-related anxiety remains unexplored. Fifth, there have been several changes in recommendations for EFAs (Costello & Osborne, 2005). Sixth, test–retest reliability for contemporary measures of these constructs remains relatively untested. Lastly, understanding the interrelationships of these constructs should support emerging transdiagnostic efforts (Norton & Philipp, 2008).

The present investigation replicates and extends Taylor's (1993) original investigation, adding IU and pain-related anxiety, utilizing contemporary versions of the measures for the constructs, and using current recommendations for EFAs. In addition, we have used a more stringent methodological test of construct independence; specifically, participants completed all items for the constructs either (a) grouped together as measures (i.e., "standard") or (b) randomly interspersed (i.e., "random"). Including the random presentation modality eliminated the possibility of incidentally inflating independence by having items grouped visually. The constructs, as measured by the items, are hypothesized to remain independent and cohesive, irrespective of presentation modality, therein providing robust support for construct independence. Furthermore, test–retest reliability will be assessed as an index of construct stability over time.

2. Materials and methods

2.1. Participants

Participants included 422 undergraduates ($n = 100$ men, ages 18–34; M = 20.5; SD = 3.0; $n = 322$ women, ages 18–54; M = 20.5; SD = 3.9) and 571 community volunteers ($n = 187$ men, ages 18–55; M = 27.9; SD = 10.4; $n = 384$ women, ages 18–55; M = 28.7; SD = 10.8) who completed measures assessing AS, FNE, IIS, IU, and pain-related anxiety. Participants were required to answer every question, resulting in no missing data. Undergraduates were solicited through the university research pool, whereas community participants were solicited with advertising to participate in anxiety research. The current study shares some of the data from a related but distinct published article examining how item order impacts endorsement rates (Carleton, Thibodeau, Osborne, & Asmundson, 2012).

Most undergraduate participants reported being employed (i.e., 5% full-time, 51% part-time), Caucasian (87%) or Asian (6%), and single (82%) or married (12%). Most community participants (67%) reported having at least some postsecondary education, being employed (i.e., 35% full-time, 21% part-time) or seeking work (12%), Caucasian (84%) or Asian (3%), and single (55%) or married (34%). Results from the prior study with this data indicated no substantive differences in sex ratios or questionnaire item endorsement rates between the undergraduate and community samples (Carleton et al., 2012); accordingly, the samples were combined for subsequent analyses (i.e., $n = 283$ men, ages 18–55; M = 25.6; SD = 9.2; $n = 704$ women, ages 18–55; M = 25.0; SD = 9.3). The undergraduate participants ($n = 422$) were invited to complete the same questionnaires again 2 weeks later. A total of 254 undergraduates participated ($n = 60$ men, ages 18–30; M = 20.5; SD = 2.9; $n = 194$ women, ages 18–54; M = 20.5; SD = 4.0), with comparable demographics to the full undergraduate sample.

Participants were randomly assigned during data collection such that approximately half viewed the items presented in the standard (i.e., "standard") visually-grouped fashion (i.e., as cohesive measures), while the others viewed the items presented in a randomly interspersed order (i.e., "random"). Random assignment was accomplished by participants selecting whether their current time ended in an odd or even number. The undergraduate participants who completed the same questionnaires 2 weeks later were assigned to the same presentation mode they completed the first time.

2.2. Measures

2.2.1. Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007)

The ASI-3 is an 18-item measure of anxiety sensitivity with 5-point Likert scales from 0 (*very little*) to 4 (*very much*). The ASI-3 has three 6-item factors: (1) fear of somatic sensations (i.e., somatic), (2) fear of cognitive dyscontrol (i.e., cognitive), and (3) fear of socially observable anxiety reactions (i.e., social). The ASI-3 has also demonstrated evidence for good convergent, discriminant, and criterion-related validity (Taylor et al., 2007).

2.2.2. Brief fear of negative evaluation scale, straightforward items (BFNE-S; (Rodebaugh, Holaway, & Heimberg, 2004; Weeks et al., 2005)

The BFNE-S comprises the eight straightforwardly worded items from the BFNE (Leary, 1983), measuring fears of negative evaluation with 5-point Likert scales from 0 (*not at all characteristic of me*) to 4 (*extremely characteristic of me*). Using only the straightforward items is well supported (Carleton, Collimore, McCabe, & Antony, 2011). The BFNE-S has excellent internal consistency, factorial validity, and construct validity (Carleton et al., 2011; Rodebaugh, Woods, Thissen, , Heimberg, Chambless, Rapee, 2004; Weeks et al., 2005).

2.2.3. Illness/Injury Sensitivity Index-Revised (ISI-R; Carleton et al., 2005)

The ISI-R is a 9-item revision of the Illness/Injury Sensitivity Index (Taylor, 1993) measuring fears of illness and injury with 5-point Likert scales from 0 (*agree very little*) to 4 (*agree very much*). The ISI-R has two factors, fear of illness and fear of injury. The ISI-R measures IIS independently from pain-related fear and anxiety (Carleton & Asmundson, 2009), with good internal consistency and convergent validity (Carleton, Park, & Asmundson, 2006).

2.2.4. Intolerance of uncertainty scale, short form (IUS-12; (Carleton, Norton, & Asmundson, 2007)

The IUS-12 is a 12-item version of the 27-item Intolerance of Uncertainty Scale (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994) measuring responses to uncertainty with 5-point Likert scales from 1 (*not at all characteristic of me*) to 5 (*entirely characteristic of me*). The IUS-12 comprises two factors (Carleton et al., 2007; McEvoy & Mahoney, 2011), prospective IU and inhibitory IU, with high internal consistencies and good convergent and discriminant validity.

2.2.5. The pain anxiety symptoms scale-short form (PASS-20; McCracken & Dhingra, 2002)

The PASS-20 is a 20-item version of the 40-item Pain Anxiety Symptoms Scale (Pass; McCracken, Zayfert, & Gross, 1992) measuring pain-related anxiety with 6-point Likert scales from 0 (*never*) to 5 (*always*). The PASS-20 comprises four 5-item subscales assessing Cognitive, Fear, Escape/Avoidance, and Physiological concerns. Factorial validity and internal consistency has been well supported (Abrams, Carleton, & Asmundson, 2007; Coons, Hadjistavropoulos, & Asmundson, 2004).

2.3. Analyses

All analyses were conducted with SPSS and AMOS version 21. Demographic comparisons assessed sex ratios and age across the presentation modalities. Descriptive statistics are in Table 1. Bootstrapped Bonferroni-corrected t-tests (i.e., 1000 samplings; $\alpha = .05/16 = .003125$) compared scores across presentation modalities at each time. Using time 1 data confirmatory factor analyses (CFAs) provided fit indices associated with the *a priori* 12-factor structure, with one factor for each subscale and all subscales inter-correlated. Raw data were used as input, along with a maximum likelihood