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Introduction

- Three fundamental fears – anxiety sensitivity, fear of negative evaluation, and injury/illness sensitivity – have been posited to contribute substantially to anxiety-related psychopathologies (Reiss, 1991).
- Taylor (1993) performed a cumulative exploratory factor analysis (EFA) on three measures of these fears and found them to be factorially distinct. The measures were the Anxiety Sensitivity Index (ASI; Reiss & McNally, 1985), a revision of the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983), and the Illness/Injury Sensitivity Index (ISI; Taylor, 1993).
- Recent findings suggest there are several reasons to revisit the premise that these fears are independent. First, all three measures have been revised. Second, the items were presented grouped together as measures, rather than randomly; accordingly, the communalities within the measures may have been inflated. Third, there have been several changes in recommendations for EFA (Costello & Osborne, 2005).
- The present investigation sought to re-examine Taylor’s findings (1993) using the revised measures, two presentation modalities (items presented as measures or randomly interspersed), current EFA recommendations (Osborne, 2008), and a confirmatory factor analysis (CFA; Hu & Bentler, 2001).

Method

- Participants included 307 undergraduates:
 - 69 men, ages 18-34 ($M = 20.6$; $SD = 3.3$)
 - 238 women, ages 18-45 ($M = 20.2$; $SD = 3.3$)
- Demographics were supplemented with:
 - Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007)
 - Brief Fear of Negative Evaluation Scale-II (BFNE-II; Carleton, Collimore, & Asmundson, 2007)
 - Illness/Injury Sensitivity Index (ISI-R; Carleton, Park, & Asmundson, 2006)
- Participants were randomly assigned such that approximately half (54%; $n=141$; 77% women) viewed the items presented normally (i.e., as cohesive measures), while the others (46%; $n=166$; 77% women) viewed the items presented in random order and interspersed with other items (i.e., questions on fear of pain, intolerance of uncertainty).
- The random viewing group was older ($M=20.7$) than the standard group ($M=19.8$), $t(305)= 2.35$, $p<.05$, $r^2<.02$.
- Total and subscale scores were compared using t-tests across each of the two groups.
- EFAs (Osborne, 2008) were used to assess the inter-item relationships and unconstrained factor structure of the items from each group. CFAs were used to assess the fit indices using the established factor structures for each measure with the data from each group.

Results

- The standard group reported significantly ($p<.05$) higher scores than the random group only on the ASI Fear of Socially Observable Anxiety Reactions subscale, $t(305)=3.32$, $p<.01$, $M_D=1.74$, $r^2=.04$, the ASI total score, $t(305)=2.27$, $p<.05$, $M_D=2.74$, $r^2=.02$, and the BFNE-II, $t(305)=2.36$, $p<.05$, $M_D=3.48$, $r^2=.02$.
- The EFA results using principal factors analysis with promax rotation (Osborne, 2008) and the Kaiser rule (Eigenvalues > 1; Kaiser, 1961) and suggested a 39-item 6-factor solution accounting for 63.63% of the variance (Table 1). The results using data from the random group suggested a 30-item 7-factor solution accounting for 59.73% of the variance.
- CFA fit indices were evaluated using established guidelines (Hu & Bentler, 1999) and item parcels: χ^2/df ratio (χ^2/df ; should be < 2.0); Comparative Fit Index (CFI; should be close to .95); the Standardised Root Mean Square Residual (SRMR; values should be close to .08); Root Mean Square Error of Approximation (RMSEA; should be close to .06); Expected Cross Validation Index (ECVI; lower values, better fit).
 - Standard Presentation (Figure 1; Loadings in italics)
 - $\chi^2(11)=68.53$, $p<.01$, $\chi^2/df=6.23$, CFI= .90, SRMR=.08, RMSEA=.19 (90% CI=.15; .24), ECVI= .73 (90% CI=.57; .95)
 - Random Presentation (Figure 1; Loadings in bold)
 - $\chi^2(11)=52.98$, $p<.01$, $\chi^2/df=4.82$, CFI= .94, SRMR=.08, RMSEA=.15 (90% CI=.11; .19), ECVI= .53 (90% CI=.41; .69)

Discussion

- There were some significant differences between the two presentation modalities; endorsement of items related to social anxiety was higher when the items were presented in the standard manner (i.e., as cohesive measures) relative to when they were presented in random order and interspersed with other items. It may be that when socially-related items are asked in close temporal proximity, the responses are inflated due to a priming effect. Future research should further explore these differences.
- EFA and CFA analyses supported the notion that the fears are actually factorially distinct (Taylor, 1993); however, the precedent model describing the relationships between the fundamental fears did not adequately fit the data. It may be that the fears are hierarchically organized, rather than functioning as equals.
- Future studies should employ larger samples ($n>1000$) that allow for CFA evaluations without the use of item parcels. Such studies would provide a more robust investigation of individual item independence, rather than an evaluation of the independence of subscales. Hierarchical linear modeling may also better delineate the interrelationships.
- Overall, it appears that the fears are generally able to maintain their statistical independence, irrespective of the presentation modality. These results support prior research (Taylor, 1993) but suggests a different structure may better describe the relationships between the fundamental fears.

Table 1. Exploratory Factor Analysis Pattern Matrix Factor Loadings

Standard Presentation Format																													
ASI-3 Subscales										ISI-R Subscales										BFNE-II									
Fear of Somatic Sensations					Fear of Cognitive Dyscontrol					Fear of Socially Observable Anxiety Reactions					Fear of Injury					Fear of Illness					Recommended Items				
3	4	7	8	12	15	2	5	10	14	16	18	1	6	9	11	13	17	1	2	5	9	3	4	6	7	8	3	5	6
Factor 1	.52	.22	.47	.88	.81	.63	-.26	-.10	.26	.18	-.07	.02	.15	.00	.11	.02	.14	.04	-.03	-.15	-.05	-.08	.05	.04	.18	.17	.26	.01	-.02
Factor 2	.11	.41	.03	-.16	-.12	.05	.94	.78	.49	.71	.91	.56	-.02	.08	.25	.18	-.03	.01	-.19	-.11	.04	.20	-.01	.00	.00	.18	.05	.13	.08
Factor 3	.09	-.10	.20	.09	.05	.00	-.05	.08	.10	.05	.08	.14	.43	.65	.42	.49	.41	.40	.25	.25	.07	.07	-.23	-.14	-.15	-.12	-.20	.13	-.15
Factor 4	-.02	.07	.02	-.02	.02	.09	-.07	.07	-.06	-.13	.04	.13	-.14	.13	-.09	.00	-.02	.13	.93	.96	.90	.79	.78	.81	.68	.47	.64	.02	-.04
Factor 5	.01	.03	-.05	-.01	-.02	-.22	.04	-.11	.09	.01	-.10	-.04	.12	.06	.21	.01	.30	.17	-.07	-.09	.01	-.07	.08	.00	.17	.07	.09	.76	.94
Factor 6	.46	.22	.24	.06	.12	-.02	.10	.11	-.23	-.04	-.09	-.22	-.02	.10	.12	-.24	.01	.13	-.09	-.10	-.10	-.10	.18	.18	.02	.21	.03	-.18	-.01
Random Presentation Format																													
Factor 1	-.09	.75	.78	.69	.69	.72	.09	-.08	.17	.09	-.06	.06	.08	.04	-.02	.11	-.15	.01	.09	.03	.06	-.05	-.03	.02	.16	-.06	-.02	.03	.04
Factor 2	.48	-.02	.10	.05	-.04	.11	.69	.42	.80	-.02	.76	-.06	.02	-.01	.34	.09	.00	-.11	-.09	-.01	-.04	.12	.09	.01	-.09	-.04	.25	.01	-.03
Factor 3	.03	-.03	-.04	.05	.05	-.06	.03	-.10	-.08	.01	-.13	.39	.58	.53	.24	.27	.40	.80	.03	.05	-.10	.11	-.04	-.05	-.04	-.04	.15	.14	.01
Factor 4	.01	.01	.03	.06	-.13	.09	-.05	-.04	.08	.00	.03	.07	-.05	-.13	-.09	-.18	.37	.14	.76	.57	.59	.84	.08	.06	-.05	-.05	.06	.10	.07
Factor 5	.41	.05	.09	-.09	.12	-.16	-.03	-.01	-.14	.03	.14	.06	.03	.09	.04	.04	-.12	-.09	.15	.25	.22	-.09	.80	.78	.74	.51	.54	.06	-.02
Factor 6	.05	-.01	-.03	-.02	-.06	.14	-.08	.03	-.01	-.01	-.03	-.06	.19	.14	.09	.42	.04	-.07	.00	.01	.10	-.02	.05	-.09	.04	.12	-.09	.63	.82
Factor 7	-.10	.04	-.06	.05	-.07	.09	.14	.55	.01	.71	.07	.41	.08	.16	-.21	-.07	.01	-.06	-.07	.04	.11	-.02	-.03	-.06	.05	.12	.04	-.05	-.06

Figure 1: Correlated Factor Model

