

Multidimensional Pain Cognitions: The Relationship Between Pain-Related Fear and Anxiety

R. Nicholas Carleton, M.A., Gordon J. G. Asmundson, Ph.D., and Donald Sharpe, Ph.D.
Anxiety and Illness Behaviours Laboratory, University of Regina, Regina, SK

Introduction

- Fear is a present-oriented emotive state associated with an imminent threat (e.g., a patient about to receive an injection), whereas anxiety is a more general, future-oriented emotive state that does not require an objective stimulus and occurs in anticipation of a threat (e.g., the possibility of receiving an injection) (Barlow, 2000). In other words, fear requires an object whereas anxiety can exist independently of an active stimulus.
- Current fear-anxiety-avoidance models of chronic pain (Asmundson, Norton, & Vlaeyen, 2004) emphasize pain-related fear and anxiety as potential precursors for chronic pain (Asmundson & Taylor, in press); however, anxiety and fear are often used interchangeably when discussing pain (e.g., Asmundson & Carleton, 2005).
- Theoretical and empirical evidence exists implying that pain-related fear and pain-related anxiety may instead represent two importantly distinct cognitive constructs (e.g., Carleton, Asmundson, Collimore, & Ellwanger, 2006; McCracken, Gross, Aikens, & Carnrike, 1996).
- The purpose of this investigation was to assess whether such a difference would be supported through psychometric evaluation.

Method

- Fear of Pain Questionnaire-Short Form (FPQ; Asmundson, Bovell, Carleton, & McWilliams, in press; McNeil & Rainwater, 1998) and the Pain Anxiety Symptoms Scale-20 (PASS-20; McCracken & Dhingra, 2002) are popular measures – often used comparably – designed to measure pain-related fear and anxiety.
- These two measures were administered to a sample of undergraduates [81 men, ages 18-37 ($M=20.5$; $SD=3.1$); 162 women ages 18-45 ($M=20.5$; $SD=3.8$)].
- Demographics and pain-related measures were supplemented with:
 - Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992)
- Confirmatory factor analysis (CFA) evaluated whether the two pain-related self-report measures better represent a unitary construct, two independent constructs, or two distinct but related constructs. Ideal CFA fit indices (Hu & Bentler, 1999): χ^2/df ratio (χ^2/df ; should be < 2.0); Comparative Fit Index (CFI; should be close to .95); Root Mean Square Error of Approximation (RMSEA; should be close to .06); Expected Cross Validation Index (ECVI; lower values, better fit).
- Correlation comparisons between each measure were also performed.

Results

- Item parcels were created to serve as observed variables, reducing indicators per latent variable, expressing a stronger relationship with latent variables, and restraining the model degrees of freedom (Bandalos, 2002; Little et al., 2002).
- Unitary Construct, 4-factor FPQ-SF, 4-factor PASS-20
 - Unacceptable fit indices, $\chi^2(20)=207.12$, $p < .01$, $\chi^2/df=10.36$, CFI=.73, RMSEA=.20 (90% CI=.17; .22), ECVI=1.05 (90% CI=.88; 1.26)
- Dual Constructs, 4-factor FPQ-SF, 4-factor PASS-20
 - Acceptable fit indices, $\chi^2(19)=41.48$, $p < .01$, $\chi^2/df=2.18$, CFI=.97, RMSEA=.07 (90% CI=.04; .10), ECVI=.38 (90% CI=.32; .47)
- Unitary Construct, 2-factor FPQ-SF, 4-factor PASS-20
 - Unacceptable fit indices, $\chi^2(9)=62.19$, $p < .01$, $\chi^2/df=6.91$, CFI=.89, RMSEA=.16 (90% CI=.12; .19), ECVI=.40 (90% CI=.32; .32); Figure 1.
- Dual Constructs, 2-factor FPQ-SF, 4-factor PASS-20
 - Acceptable fit indices, $\chi^2(8)=16.08$, $p < .01$, $\chi^2/df=2.01$, CFI=.98, RMSEA=.06 (90% CI=.01; .11), ECVI=.22 (90% CI=.19; .29); Figure 2.
- The CFA construct correlation was moderate, $r = .55$. Pearson correlations were moderate between each measure and the ASI.

Discussion

- Results of CFAs suggest that despite being moderately correlated, pain-related fear and pain-related anxiety represent different constructs. The PASS-20 appears to represent pain-related anxiety whereas the FPQ-SF appears to represent pain-related fear.
- It appears that the removal of phobia specific FPQ-SF factors (i.e., Needle and Dental) as per Asmundson et al.'s (in press) recommendation further improves fit indices.
- Differential correlations with anxiety sensitivity suggest that pain-related anxiety may be a more intrinsic fear, akin to anxiety sensitivity, whereas pain-related fear may be more experiential. If correct, the PASS-20 may measure latent (i.e., automatic) pain-related anxiety (Carleton, Asmundson, Collimore, & Ellwanger, 2006).
- Fear of pain may begin as situationally-specific learned associations. Over time, as learning increases (Anderson, 1982), these situationally-specific associations may become automatic and may generalize to related situations. The differential between the fear of pain measures, and the theorized explanation for their relationship, would be in line with the current fear-avoidance model of chronic pain.

Figure 1: Unitary Construct, 2-factor FPQ-SF[†], 4-factor PASS-20

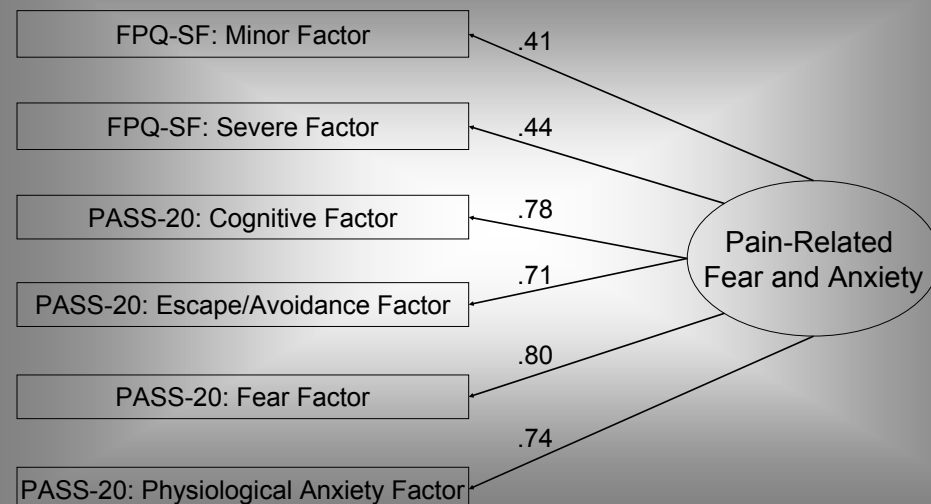


Figure 2: Dual Constructs, 2-factor FPQ-SF[†], 4-factor PASS-20

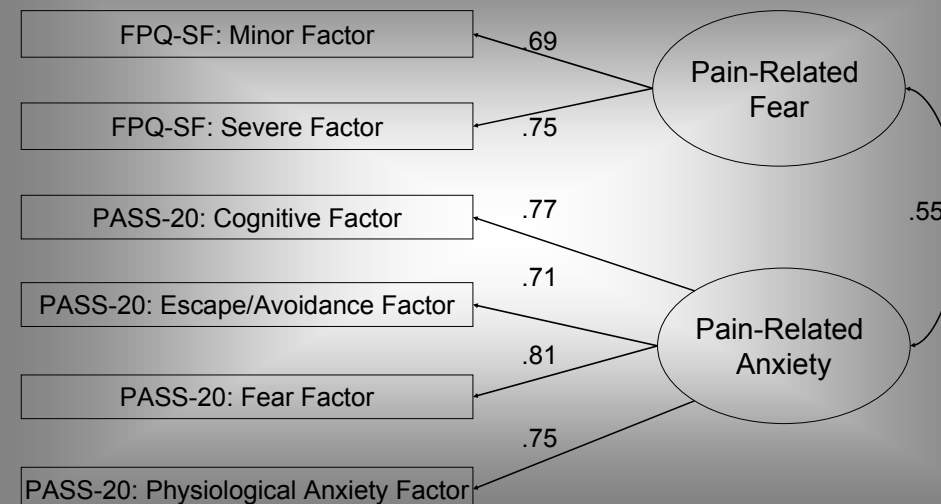


Table 1: Correlations

	PASS-20 Total	FPQ-SF Total [†]	Fisher's <i>r</i> -z Z-Score
ASI Total Score	0.59	0.44	2.20, $p < .05$
ASI - Somatic Subscale	0.61	0.45	2.41, $p < .05$
ASI - Cognitive Subscale	0.44	0.32	1.52, $p > .05$
ASI - Social Subscale	0.41	0.29	1.49, $p > .05$

[†] Using only the Minor and Severe Pain Items as per Asmundson et al., in press