Underlying Dimensions of Health Anxiety: More than Fearful Worrying about Illnesses

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Introduction

- Health anxiety occurs when bodily sensations or changes are interpreted as being indicative of pathology.
- Health anxiety is increasingly viewed as a continuum construct (e.g., Salkovskis & Warwick, 1986; Taylor & Asmundson, 2004), with mild health anxiety occurring commonly (e.g., worry that an upset stomach indicates food poisoning) and extreme health anxiety including disorders (e.g., hypochondriasis).
- People with increasingly high health anxiety are often thought to simply be worrying too much about their health.
- Cognitive-behavioural models of health anxiety highlight core features including:
  - (1) disease conviction (i.e., the persistent belief that one has a serious disease);
  - (2) bodily preoccupation (i.e., hypervigilance to bodily sensations and their possible implications); and
  - (3) disease-related fear (i.e., fear that one has already developed, or will develop, a serious disease).
- To date, no investigations have explored the contributions of general worry and fear of illness relative to other intuitively related constructs with face-validity, such as fear of anxiety-related sensations, pain-related anxiety, or intolerance of uncertainty.

Method

- Participants included 287 undergraduates:
  - 64 Men, ages 18-34 (*M* = 20.58; *SD* = 3.23)
  - 223 Women, ages 18-45 (*M* = 20.18; *SD* = 3.24)
- Demographics were supplemented with:
  - Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007)
  - Illness/Injury Sensitivity Index (ISI-R; Carleton et al., 2006)
  - Intolerance of Uncertainty Scale–Short Form (IUS-12; Carleton et al., 2007).
  - Pain Anxiety Symptoms Scale (PASS-20; McCracken & Dhingra, 2002)
  - Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990).
  - Whiteley Index (WI; Pilowsky, 1967; Welch et al., 2008)
- Hierarchical linear regression analysis was performed to assess the variance accounted for in the Likert-scale Whiteley Index by each of the other variables with potentially content-valid associations for health anxiety (Asmundson, Carleton, Bovell, & Taylor, 2008).
- WI scores were entered as the dependent variable, with the PSWQ entered in the first step and the Fear of Illness subscale of the ISI-R in the second step. The final step included the Fear of Injury subscale ISI-R, the subscales of the ASI-3, the subscales of the IUS-12, and the subscales of the PASS-20.
- Correlation analyses were performed to assess the inter-subscale associations.

Results

- Descriptive statistics for each variable are presented in Table 1. There were no significant differences between men and women on the subscales of the ASI , the ISI-R, the IUS-12, or the WI (all *ps*>.10).
- Women did reported higher scores than men on the PSWQ, $t(285)=3.47$, $p<.01$, $r^2=.04$, as well as the cognitive subscale of the PASS-20, $t(285)=2.51$, $p<.05$, $r^2=.02$, but not on the other PASS-20 subscales (all *ps* > .10).
- Results of the regression analyses suggested that general worry, as measured by the PSWQ, accounted for 27% of the variance in the WI scores, whereas fear of illness accounted for an additional 26% of the variance accounted for in the WI scores.
- Variables beyond general worry and fear of illness accounted for an additional 11% of the variance in WI scores.
- Each of the three steps within the hierarchical regression was statistically significant; however, in the third step only the IUS-Prospective Anxiety subscale and the PASS-20 Fear of Pain subscale remained statistically significant after the variance accounted for by the first two steps (Table 2).
- All of the Pearson correlations across the subscales were statistically significant (all *ps*<.01; Table 3), suggesting substantial inter-relationships despite what appear to be readily apparent item content differences based on face-valid distinctions.

Discussion

- Exploration of the dimensional nature of health anxiety as it relates to simpler, more fundamental fears (Reiss, 1991; Taylor, 1993) provides avenues for research and clinical focus. In line with precedent cognitive-behavioural models of health anxiety, generalized worry and fear of illness accounted for the majority of the variance in health anxiety.
- The IUS-Prospective Anxiety subscale and the PASS-20 Fear of Pain subscale made statistically significant contributions beyond general worry and fear of illness, suggesting that uncertainty regarding the unknown future along with pain-related anxiety potentially associated with disease may play a significant in facilitating or maintaining health anxiety.
- Anxiety sensitivity is conceptually associated with health anxiety –as a function of bodily preoccupation–but appears to play a relative minor role in symptom presentations measured by the WI. Similarly, the escape/avoidance behaviours (Abrams et al., 2007) and the fears of injury (Smeets et al., 2006) associated with pain-related anxiety and chronic pain appear relatively unimportant, suggesting the WI and possible health anxiety is specifically tapping disease or illness pathology and not general health concerns.
- Future research should assess the independent and overlapping diagnostic and therapeutic contributions of the WI, the PSWQ, and the ISI-R in clinical samples. The relationship between health anxiety and chronic pain also remains to be assessed and may be a function of ruminative focus of patient-specific fear.

Table 1: Descriptive statistics

	M	*SD*	*Skew* (*SE*=.14)	*Kurtosis* (*SE*=.29)
ASI-3 Somatic	4.02	4.43	1.50	2.07
ASI-3 Cognitive	3.00	3.78	1.83	3.48
ASI-3 Social	7.56	4.66	.58	-.20
ASI-3 Total	14.58	10.55	1.12	1.15
ISI-R Fear of Illness	6.48	4.97	.69	-.39
ISI-R Fear of Injury	4.29	4.31	.97	.04
ISI-R Total	10.77	8.62	.84	-.15
IUS-12 Prospective Anxiety	17.40	5.33	.49	.12
IUS-12 Inhibitory Anxiety	9.93	4.13	.96	.68
IUS-12 Total	27.34	8.75	.71	.42
PASS-20 Cognitive	8.44	5.58	.72	.11
PASS-20 Escape/Avoidance	6.21	4.84	.96	1.10
PASS-20 Fear	4.03	4.55	1.25	.89
PASS-20 Physiological	4.97	4.65	1.04	.91
PASS-20 Total	23.65	16.29	.73	-.17
PSWQ Total	42.18	9.89	.31	-.69
Whiteley Total	27.40	9.47	1.41	2.21

Table 2. Regression model, ANOVA summary table, coefficients

Model	Independent Variables	*F*	Adj. R^2	R^2 Δ	*β*	*t*	*p*	Zero-order	Partial	Part
1	(Constant)	$F(1, 286)=107.24$, $p<.01$	.27	.27		2.99	<.01			
	PSWQ Total				.52	10.36	<.01	.52	.52	.52
2	(Constant)	$F(2, 286)=161.25$, $p<.01$	.53	.26		6.48	<.01			
	PSWQ Total				.22	4.65	<.01	.52	.27	.19
	ISI-R - Fear of Illness				.59	12.52	<.01	.70	.60	.51
3	(Constant)	$F(12, 286)=40.54$, $p<.01$	.62	.11		6.87	<.01			
	PSWQ Total				.09	1.89	.06	.52	.11	.07
	ISI-R - Fear of Illness				.36	5.80	<.01	.70	.33	.21
	IUS-12 Prospective Anxiety				.12	2.19	<.05	.51	.13	.08
	IUS-12 Inhibitory Anxiety				.03	.53	>.10	.57	.03	.02
	ASI-3 Somatic				.07	1.36	>.10	.60	.08	.05
	ASI-3 Cognitive				.06	1.14	>.10	.54	.07	.04
	ASI-3 Social				-.06	-1.24	>.10	.38	-.07	-.04
	ISI-R - Fear of Injury				-.06	-1.08	>.10	.55	-.07	-.04
	PASS-20 Cognitive				.05	.94	>.10	.53	.06	.03
	PASS-20 Escape/Avoidance				-.05	-1.01	>.10	.43	-.06	-.04
	PASS-20 Fear				.30	4.67	<.01	.71	.27	.17
	PASS-20 Physiological				.05	1.00	>.10	.50	.06	.04

Table 3. Correlations

		Whiteley Total	1	2	3	4	5	6	7	8	9	10	11
ASI-3	1. Somatic	.60											
	2. Cognitive	.54	.59										
	3. Social	.38	.46	.48									
ISI-R	4. Fear of Injury	.55	.52	.43	.38								
	5. Fear of Illness	.70	.59	.48	.36	.73							
IUS-12	6. Prospective Anxiety	.51	.44	.42	.54	.44	.44						
	7. Inhibitory Anxiety	.57	.53	.54	.52	.49	.56	.71					
PASS-20	8. Cognitive	.53	.45	.42	.38	.55	.56	.42	.48				
	9. Escape/Avoidance	.43	.41	.28	.32	.47	.47	.37	.37	.62			
	10. Fear	.71	.69	.60	.42	.59	.66	.48	.57	.57	.56		
	11. Physiological	.50	.43	.48	.41	.46	.45	.40	.45	.62	.54	.59	
	12. PSWQ Total	.52	.46	.43	.48	.39	.51	.47	.55	.45	.33	.48	.39