

# Experiential Fear of Pain: Revising the Fear of Pain Questionnaire-III

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## Introduction

- Fear of pain is a negative emotional reaction involving belief that the presence of pain indicates damage or harm to the body
- Fear of pain promotes physical activity avoidance, which, in turn, can lead to chronic pain, increased disability, and physical deconditioning (Albaret et al., 2004; Asmundson et al., 2004; Dehghani et al., 2003; Zvolensky et al., 2001)
- The Fear of Pain Questionnaire-III (FPQ-III; McNeil & Rainwater, 1998) is an empirically derived, self-report inventory that assesses fear of minor pain, severe pain, and medical pain factors
- Confirmatory factor analyses (CFAs) of the 3-factor model of the FPQ-III indicated that the structure could be improved (Albaret et al., 2004; Osman et al., 2002; Roelofs et al., 2005)
- This study had two purposes:
  - 1) To evaluate the different models suggested by previous researchers
  - 2) To adjust the FPQ-III item content to create a stable structure with good fit indices relative to previous studies

## Method

- Participants were 589 undergraduates from the University of Regina and the University of Manitoba randomly divided into 2 groups
  - Group A:
    - 112 men ages 17-43 ( $M_{age} = 20.8$ ;  $SD = 4.1$ )
    - 182 women ages 17-48 ( $M_{age} = 22.1$ ;  $SD = 5.6$ )
  - Group B:
    - 107 men ages 17-45 ( $M_{age} = 21.9$ ;  $SD = 4.9$ )
    - 188 women ages 17-50 ( $M_{age} = 21.6$ ;  $SD = 5.1$ )
- Measure: The FPQ-III is a 30-item (5-point Likert) self-report measure with good internal consistency ( $\alpha = .92$ ) and test-retest reliability (0.74; McNeil & Rainwater, 1998)
- Group A:
  - 30-item (McNeil & Rainwater, 1998) and 15-item (Albaret et al., 2004) 3-factor models were tested using CFAs (Table 1)
  - Confounding fear of blindness or death items were removed
  - Exploratory factor analysis (EFA) was done using principal factors analysis with promax rotation
  - Item retention was based on factor loadings  $\geq .50$ , or cross-loadings  $\leq .32$  (Costello & Osborne, 2005)
- Group B:
  - CFA was used to test the EFA-recommended model fit (Table 1)

## Results

- Group A: In Table 1, the 30-item (Model 1) and 15-item (Model 2) 3-factor models did not provide adequate fit indices
- EFA suggested a 20-item 4-factor solution accounting for 47.43% of the variance called the FPQ-IV (Table 2)
- The factors of the FPQ-IV were fear of:
  - Minor Pain,  $\alpha = .85$  ( $M = 12.98$ ;  $SD = 4.83$ ),
  - Severe Pain,  $\alpha = .88$  ( $M = 17.53$ ;  $SD = 5.71$ )
  - Injection Pain,  $\alpha = .90$  ( $M = 6.01$ ;  $SD = 3.28$ )
  - Dental Pain,  $\alpha = .83$  ( $M = 7.63$ ;  $SD = 3.24$ )
- FPQ-IV Total score  $\alpha = .91$  ( $M = 44.14$ ;  $SD = 13.26$ )
- Group B: In Table 1, four subsequent CFAs were performed (Models 3-6). The 20-item, 4-factor model had the best fit (Model 3)
- We recommend that FPQ-IV subscale scores be calculated by summing items related to each factor:
  - Minor Pain = 2, 4, 7, 19, 22, 23, 24, 28
  - Severe Pain = 1, 3, 5, 6, 9, 10
  - Injection Pain = 8, 11, 14
  - Dental Pain = 17, 26, 27

## Discussion

- The FPQ-III can inform our understanding of fear of pain and activity avoidance
- However, the factor structure to the FPQ-III has been in question (Albaret et al., 2004; Osman et al., 2002; Roelofs et al., 2005)
- The intent of this investigation was to reassess the factor structure using CFA and EFA methods and adjust the item content to establish a more stable structure
- CFAs of the McNeil and Rainwater model (3-factor 30-items) and the Albaret et al. model (3-factor 15-items) resulted in poor fit indices
  - EFA was used to re-assess the FPQ-III. A 4-factor 20-item model (FPQ-IV) was suggested
  - The FPQ-IV factors (Minor Pain, Severe Pain, Injection Pain, and Dental Pain) were affirmed by a CFA in a comparable, independent sample and resulted in a more acceptable fit indices
- The FPQ-IV would benefit from additional psychometric validation. Future studies of the FPQ-IV should include concurrent validity measures, employ a variety of samples, and reliability testing

**Table 1. Confirmatory Factor Analysis Fit Indices**

Model	Group	Factors	Items	$\chi^2/df$	CFI	SRMR	RMSEA	RMSEA CI	ECVI	ECVI CI
1	A	3	30	3.83	0.90	0.09	0.10	0.10; 0.11	6.02	5.61; 6.46
2	A	3	15	5.13	0.90	0.10	0.12	0.11; 0.13	1.83	1.61; 2.08
3	B	4	20	3.15	0.95	0.08	0.09	0.08; 0.10	2.15	1.92; 2.40
4	B	3	17	3.56	0.95	0.07	0.10	0.09; 0.11	1.77	1.56; 2.00
5	B	3	17	3.56	0.94	0.07	0.10	0.09; 0.11	1.75	1.54; 1.98
6	B	2	14	4.54	0.93	0.08	0.12	0.11; 0.13	1.48	1.29; 1.70

Group A,  $N = 294$ , Group B,  $N = 295$

Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), Expected Cross-Validation Index (ECVI). Higher CFI values indicate better fit, whereas lower values on all other indices indicate better fit. RMSEA CI = 90% Confidence Interval for RMSEA (low; high). ECVI CI = 90% Confidence Interval for ECVI (low; high).

**Table 2. FPQ-III Factor Loadings**

Item	Minor	Severe	Injection	Dental	Item	Minor	Severe	Injection	Dental	Item	Minor	Severe	Injection	Dental
19	.75	-.18	.16	-.06	15*	.28	.20	.23	.11	29	-.07	-.11	.04	.81
2	.73	.21	-.08	-.18	6	-.06	.82	-.05	.01	26	-.02	.04	-.03	.66
4	.65	.12	.05	-.16	3	.05	.78	-.03	-.04	17	-.07	.04	.33	.50
24	.60	-.07	-.13	.16	5	.01	.75	-.01	-.09	27*	.15	.14	-.10	.47
7	.59	-.05	.07	-.06	10	-.07	.71	-.07	.15	20*	.11	.07	.17	.45
22	.55	-.13	.09	.12	1	-.20	.64	.06	.04	18*	-.01	.36	-.04	.43
23	.54	-.02	-.10	.11	9	.25	.59	.07	-.08	21*	.17	.09	.17	.35
28	.50	-.07	-.19	.32	11	.01	-.10	.92	-.01					
12*	.45	.17	.13	.01	8	.03	-.05	.89	-.04					
30*	.41	-.14	-.12	.38	14	-.09	.13	.72	.07					

\*These items did not meet the factor-loading criteria  
Primary factor loadings are in blue type