

Gender Specific Responses on the Childhood Illness Anxiety Scales (CIAS)

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Introduction

- ◆ Health Anxiety (HA) is characterized by excessive fears and concerns of having or acquiring a serious disease (e.g., cancer, cardiovascular disease). In response to these fears it is common to engage in various safety behaviors (e.g., self-checking, reassurance seeking).
 - ◆ Until recently, severe HA was considered to begin in adulthood (APA, 2000).
 - ◆ Emerging research suggests, however, that symptoms of HA are relatively common in children and adolescents, show continuity from early ages, and are associated with increased distress and health care expenditure (Rask et al., 2012; Sirri et al., 2015)
- ◆ Limited number of methods are available for assessing HA in children and adolescents.
 - ◆ It is imperative to improve the few HA measures that exist for youth populations, by examining how they perform within specific groups (e.g., boys and girls).
- ◆ The goal of our study was to examine gender-specific differential item functioning (DIF) of the Childhood Illness Anxiety Scales (CIAS); that is, whether boys and girls with similar levels of health anxiety respond to the CIAS in similar ways.

Methods

- ◆ The CIAS is a self-report measure that assesses HA in children 8-15 years of age with 33-items on three to five-point scales (e.g., “Are you worried that you might get really sick in the future?”), and two open-ended questions.
- ◆ This study used Confirmatory Factor Analyses (CFAs) with maximum likelihood estimation on CIAS responses of 2247 Danish (n = 1881) and Canadian (n = 366) school-aged children (M_{age} = 11.02, SD = .805; 52.4% girls, 47.6% boys).
- ◆ Two methods were used to test differential item functioning (DIF) in CIAS responses:
 - ◆ Uniform DIF: Mantel-Haenszel chi-square tests, which compare the odds of selecting item-level response options in boys and girls at each level of the continuum of the latent trait. Standardized mean differences were used to classify the severity of DIF (A: negligible; B: marginal; and C: substantial).
 - ◆ Non-uniform DIF: Visual inspection of item and test characteristic curves, which plot expected item responses based on level of the latent trait in girls and boys.

Table 1. Factor loadings and results from Mantel-Haenszel chi-square test using girls as reference group

CIAS Item	Factor loadings		Mantel-Haenszel chi-square test			
	Girls	Boys	χ^2	ES	Class	
Fears	1. Worry about health	0.59	0.52	3.41	-0.00	A
	2. Worry about future sickness	0.69	0.65	0.30	-0.03	A
	3. Scared of thoughts of being sick	0.64	0.56	0.51	-0.03	A
	4. Worry that pain is caused by a bad sickness	0.68	0.63	0.47	-0.01	A
	7. Worry that pain lasting a week is bad sickness	0.60	0.57	14.35	0.02	A
	16. Believe has a new sickness	0.53	0.43	1.12	-0.01	A
	17. Afraid of reminders of death	0.60	0.61	8.69	-0.07	A
	19. Afraid may die soon	0.63	0.57	5.42	-0.04	A
	21. Afraid something is wrong with heart	0.59	0.55	0.68	-0.03	A
	22. Afraid has another bad sickness	0.64	0.47	0.05	-0.01	A
	23. Think has a sickness if reads about it	0.66	0.53	0.20	-0.01	A
Help-Seeking	6. Pain lasting for a week, asks for doctor	0.78	0.78	2.14	-0.01	A
	12. Tell mom and dad if sick	0.33	0.36	0.10	0.00	A
	13. Ask mom and dad to go to doctor if feels sick	0.91	0.94	1.50	-0.01	A
	14. Ask mom or dad for medicine	0.40	0.40	0.00	-0.00	A
	26. Tell mom and dad about a strange feeling	0.47	0.56	6.02	-0.07	A
27. Ask to see doctor for a strange bodily feeling	0.70	0.69	0.55	-0.01	A	
Symptom Effect	24. Hard to think, when notice a strange feeling	0.76	0.55	3.39	-0.04	A
	33. Strange feelings in body stop from going to school	0.70	0.58	2.18	0.01	A
	34. Strange feelings in body stops from enjoying	0.71	0.72	0.22	-0.00	A
	35. Strange feelings interrupt focus	0.64	0.74	1.66	0.01	A

Results

- ◆ A modified 3-factor CFA models provided the best fit in each gender:
 - ◆ Boys: $\chi^2 = 407.24$, df = 110; $\chi^2 / df = 2.9$; AIC = 507.24, BIC = 756.01. RMSEA = .042; CFI = .956; GFI = .958)
 - ◆ Girls: $\chi^2 = 400.23$, df = 136; $\chi^2 / df = 2.94$; AIC = 508.29, BIC = 782.12. RMSEA = .041; CFI = .968; GFI = .963)
- ◆ Factor 1, Fears, is comprised of 11 items assessing fears of illness, death, disease and pain. Factor 2 consists of six items assessing behaviors related to illness concerns. Factor 3 has four items that assess symptom impact on functioning.
- ◆ Results of the Mantel-Haenszel chi-square test suggested negligible DIF in all items, meaning that boys and girls with similar levels of HA respond similarly to items (see Table 1).
- ◆ Items characteristic curves suggested no DIF in items for Help-Seeking and Symptom Effects. Item 23 on the Fears factor exhibited non-uniform DIF; however, test characteristic curves suggested no substantial bias at the scale level for any of the factors (see Figure 1).

Discussion

- ◆ Whereas an initial factor analysis for the CIAS (Wright & Asmundson, 2005) revealed four factors (fears, help-seeking, treatment experience and symptom effects), the results of this study supported a *modified three-factor structure* for the CIAS, in line with Delparte et al. (2015).
- ◆ The results of the DIF analyses were congruent and no gender-based response bias was found on the CIAS; thus, girls and boys with similar levels of HA selected similar item responses.
- ◆ These results suggest that the CIAS:
 - ◆ Measures multidimensional HA in boys and girls
 - ◆ Is not gender-biased
 - ◆ May be used with confidence in research and clinical settings, although further research into the psychometric properties of CIAS in other specific groups (e.g., minorities) is needed.

