The International Journal of Educational and Psychological Assessment
April 2013, Vol. 13(1)

Anxiety Disorder Symptoms in Trinidadian Adolescents

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Abstract

Anxiety disorders have been studied in the United States, but less is known about their prevalence elsewhere. Accordingly, this study aimed to increase understanding of the epidemiology of anxiety in the adolescent population of Trinidad and Tobago. The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985) was administered to a sample of 897 adolescents drawn from Trinidadian secondary schools. Total Anxiety scores and the proportion of clinically significant scores within this sample provide normative data for this population. Although differences in anxiety levels across age and ethnic groups were not detected, girls reported greater anxiety than boys and were more likely to exhibit clinically significant symptom levels. Factor analytic findings, internal consistency estimates, and high convergence between anxiety scores and depressive symptoms support the validity of the RCMAS with this population.

Keywords: Adolescents, anxiety, anxiety disorders, RCMAS, Trinidad and Tobago, Youth

AnxietyDisorder Symptoms in Trinidadian Adolescents

Anxiety is conceptualized as a negative affective state predicated on preoccupation with the future and the feeling that one is helpless to control future events in a desirable manner (Barlow, 2002), and is one of the most common forms of psychopathology affecting adolescents (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Kessler et al., 1994). Feelings of anxiety are not inherently abnormal, but can become severe enough to impair functioning in some individuals. When functioning is significantly impaired, one or more anxiety disorders may be diagnosed (American Psychiatric Association, 2000).

Though much is known about the epidemiology of anxiety in Western cultures, less is known about its prevalence in non-Western populations. Worldwide estimates of the prevalence of anxiety disorder symptoms in youth are

varied and largely dependent on themethod and interval of assessment (Costello, Egger, & Angold, 2004). Within the United States, the current prevalence rate of anxiety disorders in adolescents has been estimated at around 3% (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993) as assessed by semistructured interviews adapted from the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS; Puig-Antich & Chambers, 1983). Based on parent and child interviews (Angold et al., 1995; Kessler & Ustun, 2004), other studies of adolescents in the United States have found the lifetime prevalence of anxiety, or the percentage of youth who have met criteria for an anxiety disorderby the end of adolescence, to be as low as 9.9% (Costello et al., 2003) and as high as 31.9% (Merikangas et al., 2010). Rates within this range have also been found in German (Essau, Conradt, & Petermann, 2000), Omanian (Jaju, Al-Adawi, Al-Kharusi, Morsi, & Al-Riyami, 2009) and Nigerian (Adewuya, Ola, & Adewumi, 2007) samples, with interviews adapted for local languages (Karam et al., 2006; Sheehan et al., 1998; Wittchen & Pfister, 1996). Given that the criteria for considering an individual to be anxiety disordered can vary widely, and that all youth experience worries and fears at some point in their lives, there are likely many who experience anxiety symptoms but do not fully meet diagnostic criteria for having an anxiety disorder (Bell-Dolan, Last, & Strauss, 1990).

Demographic Trends in Anxiety Disorders

Independent of type of assessment (i. e., interview schedules vs. self-report rating scales), findings from studies around the world show generally consistent gender-related trends in adolescent anxiety disorder symptoms. Specifically, girls are likely to experience significantly more anxiety symptoms than boys. This trend has been noted by researchers in many countries, including Australia (Boyd, Kostanski, Gullone, Ollendick, & Shek, 2000), Nigeria (Adewuya et al., 2007), and Japan (Ishikawa, Sato, & Sasagawa, 2009). Moreover, girls are also considerably more likely to be diagnosed with anxiety disorders than boys. For example, a study of American adolescents yielded lifetime prevalence rates for anxiety disorders of 12.1% for girls and 7.7% for boys (Costello et al., 2003). Although the presence of gender effects appears to be nearly universal, the degree of these effectsmay vary from country to country. Ang, Lowe, and Yusof (2011) detected only small differences in overall anxiety levels of boys and girls in Singapore, and in a recent study comparing the anxiety levels of adolescents in England and Japan, Essau et al. (2011) found much more profound gender effects in English youth than Japanese youth. Gender-based differences are also thought to exist in the expression of specific anxiety disorders, with girls exhibiting different symptom patterns than boys for some conditions (Yonkers & Gurguis, 1995).

Research on the presence of age-related trends in adolescent anxiety disorder symptoms has yielded less consistent results. Boyd et al. (2000) found no significant age-related differences in anxiety levels of Australian adolescents, and Dong, Yang, and Ollendick (1994) obtained similar results with a sample of Chinese adolescents. However, other studies have reported differences by age or grade level. For example, Essau et al. (2000) found rates of anxiety disorders,

particularly phobias and posttraumatic stress disorder, to increase significantly with age in a sample of German youth aged 12-17. Lewinsohn, Gotlib, Lewinsohn, Seeley, and Allen (1998) also noted an increase in generalized anxiety rates over the adolescent period in an American sample and, in analyzing gender differences in the age of onset of anxiety disorders, found more pronounced age effects for girls than boys. Studies tracing the development of anxiety across both childhood and adolescence have generated similarly conflicting results. Yen et al. (2010) documented an increase in social anxiety symptoms from late childhood to late adolescence in Taiwanese youth, noting that this particular form of anxiety appeared to be most prevalent within adolescents aged 16-19. However, results of studies comparing childhood and adolescent anxiety levels in both Japan (Ishikawa et al., 2009) and the United States (Reynolds & Richmond, 1985) imply that adolescents tend to exhibit lower levels of anxiety in general than children.

Researchers investigating cultural, gender, and age-related trends in adolescent anxiety have used a wide variety of assessment methods. For decades, clinical interviews have been the most frequently used tools to assess many forms of psychological impairment in youth, including anxiety disorders (Silverman & Ollendick, 2005). Although the use of well-establishedinterview schedules can allow for strong interrater reliability of diagnoses (Lyneham, Abbott, & Rapee, 2007) in general, clinical interviews are prone to low levels of agreement among informants (Grills & Ollendick, 2003) and can be very time-consuming (Greco & Morris, 2004). Teacher, parent, and self-report rating scalespresent a quicker and easieralternative to clinical interviews. Rating scales are not completely free from the psychometric weaknesses that plague interviews, including low levels of agreement among informants (Achenbach, McConaughy, & Howell, 1987), and are not recommended as the sole method for formal diagnosis of anxiety disorders (Greco & Morris, 2004). Even so, the practical utility of these instruments has led to their extensive use in bothclinical and research settings, and manyhave strongempirical support for their psychometric properties (Silverman & Ollendick, 2005).

The Present Study

One of the most commonly used rating scales for assessing the epidemiology of child and adolescent anxiety worldwide is the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985), a 37-item self-report instrument designed to measure anxietyin youth aged 6-19 years.The RCMAS produces a Total Anxiety score that indicates the overall level of anxiety a child is experiencing, as well as scores on three subscales (Physiological Anxiety, Worry/Oversensitivity, and Social Concerns/Concentration) that provide insight into the specific nature of the anxiety. The instrument also includes a Lie scale designed to assist clinicians with determining whether or not a child's responses are valid.With a typical completion time of 10 minutes, the measure can be administered to large groups of children and adolescents in a short period of time.

The psychometric properties of the RCMAS are well-documented in the literature. The Total Anxiety score, in particular, has been found to demonstrate

high internal consistency and test-retest reliability (Silverman & Ollendick, 2005), as well as strong convergent validity with other established measures of youth anxiety (Muris, Merckelbach, Ollendick, King, & Bogie, 2002). Additionally, Seligman, Ollendick, Langley, and Baldacci (2004) noted that the RCMAS excels at discriminating between youth with and without anxiety disorders. Factor analysis of the RCMAS in the United States has consistently produced a five-factor structure, with three anxiety factors and two lie factors (Reynolds & Paget, 1981; Reynolds & Richmond, 1985). This structure has been replicated in studies employing the RCMAS with youth from other countries (e. g., Bidjerano, 2006; Ferrando, 1994; Turgeon & Chartrand, 2003).

The ease of administration and psychometric utility of the RCMAS have made it a useful tool for examining the current incidence of anxiety disordersin community samples of children and adolescents around the world. Like prevalence rates derived from other assessment methods, rates of anxiety disorders estimated using the RCMAS vary across countries. Scores are considered clinically significant if they are greater than or equal to one standard deviation above the mean, or a *T*-score of 60 (Reynolds & Richmond, 1985). Using this method, rates of anxiety disorders have been estimated at 5.3% for Chinese youth (Dong et al., 1994), 13.2% for Australian adolescents (Boyd et al., 2000), and 25% for Canadian youth (Stavrakaki, Caplan-Williams, Walker, Roberts, & Kotsopoulos, 1991).

In this study, we used the RCMAS to investigate the presence of anxiety disorder symptoms in a sample of adolescents aged 11-18 years in the Republic of Trinidad and Tobago, an island nation located in the southern Caribbean Sea. Though researchers have investigated the prevalence of depression (Maharajh, Ali, & Konings, 2006) and the structure of fear (Fisher, Schaefer, Watkins, Worrell, & Hall, 2006) within this country's adolescent population, no known scientific research exists on the epidemiology of anxiety in Trinidadian youth. The goals of this study are to (a) establish normative anxiety data for the Trinidadian adolescent population, (b) identify potential gender, ethnicity, and age-based trends, and (c) validate the RCMAS for potential future use within this population. Given the paucity of anxiety research specific to this region, this study aims to increase understanding of global trends in adolescent anxiety disorder symptoms and provide a sound basis for the future study of anxiety in Trinidadian youth.

Method

Participants

The sample included 886 adolescents aged 11-18 years (M = 14.24, SD = 1.48) from the Republic of Trinidad and Tobago. Although 897 adolescents were originally selected to participate in the study, nine adolescents who omitted three or more items on the RCMAS were not included. Additionally, in keeping with the recommendations for clinical cutoff scores (Montgomery & Finch, 1974; Reynolds & Richmond, 1985), two adolescents whose Total Anxiety scores and scores on the Lie scale were at least one standard deviation above the mean for the

standardization sample (Lie subscale scaled score greater than or equal to 7 and Total Anxiety score greater than or equal to19) wereexcluded.

Of the 882 adolescents who reported their gender, 487 were female (54.8%) and 395 (44.5%) were male. Of the 880 who reported their ethnicity, 194 were of African descent (21.8%), 379 were of East Indian descent (42.7%), 286 were of Mixed descent (32.2%), and 21 were of Other descent (2.4%). The gender and ethnic characteristics of the sample generally matched the characteristics of the Trinidadian population cited in national census data (Caricom Capacity Development Programme, 2009), with females and individuals of Mixed descent slightly overrepresented in the sample.

Procedures

Participants were selected based on their enrollment in Forms 1 through 5 of the Trinidadian secondary school system (roughly equivalent to grades 6-10 in the U. S. school system). A directory of all secondary schools within the country's eight educational divisions was obtained from the Educational Planning Division of the Trinidad and Tobago Ministry of Education (1998). Lists of schools serving each of the five forms were created, and six schools from each list were randomly chosen to participate in the study. To keep the sample relatively gender balanced, if a school serving just one gender was chosen, the next random selection was limited to schools serving the other gender. Once schools were chosen, one classroom was randomly selected among all classrooms at each school. A total of 30 classrooms were chosen for participation, but 27 were included in the final sample due to an inability to obtain data from three classrooms. Though this led to a lack of data from the St. Andrew/St. David and Tobago regions, the distribution of participants in the final sample appeared to adequately parallel the population distribution of the country across the remaining six educational divisions (Caricom Capacity Development Programme, 2009).

Measure

The RCMAS (Reynolds & Richmond, 1985) is a 37-item self-report scale designed to evaluate the amount and origin of anxiety experienced by children and adolescents aged 6-19 years. Youth are asked to read each item and mark either "yes" or "no," depending upon whether or not the statement describes them. Responses to 28 items yield a Total Anxiety score as well as scores on three subscales – Physiological Anxiety, Worry/Oversensitivity, and Social Concerns/Concentration. The remaining 9 items comprise the Lie scale, a measure of the tendency to portray oneself in a universally positive light. Interpretation of the Total Anxiety score is based on scaled T score equivalents (M = 50, SD = 10), with scores greater than one standard deviation above the mean considered clinically significant (Reynolds & Richmond, 1985).

Evidence for the psychometric adequacy of the RCMAS is generally strong. In a review of the literature, Silverman and Ollendick (2005) noted that the reliability of RCMAS Total Anxiety scores has been well-supported, citing internal

consistency estimates greater than .80 and test-retest coefficients ranging from .64 to .76. However, internal consistency estimates for the individual subscales – particularly Physiological Anxiety and Social Concern/Concentration – are considerably lower and consequently not recommended for research purposes without careful consideration (Ryngala, Shields, & Caruso, 2005). Findings on the validity of the RCMAS are also mostly positive, with a few potential issues. In a study on the convergent validity of the RCMAS, Muris et al. (2002) found that Total Anxiety scores correlated in the .76 to .88 range with scores on both traditional and recently established measures of anxiety in children and adolescents, including the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) and the Spence Children's Anxiety Scale (SCAS; Spence, 1998). A recent meta-analysis also revealed the RCMAS to be capable of discriminatingbetween anxiety-disordered and non-disordered youth, with a weighted mean effect size of 1.23 across 23 studies (Seligman et al., 2004).

There is also extensive evidence to support use of the RCMAS across cultural groups. The instrument was originally normed on a sample of 4,972 U.S. children and adolescents between the ages of 6 and 19 drawn from 13 states (Reynolds & Richmond, 1985). Although the original sampling procedures led to slight underrepresentation of Hispanic American students (Kamphaus & Frick, 2005), other research has supported the reliability and validity of the instrument across ethnic groups within the United States (Pina, Little, Knight, & Silverman, 2009; Reynolds & Paget, 1981; Varela & Biggs, 2006). Additional support for the psychometric utility of the RCMAS can be found internationally. The internal consistency of RCMAS Total Anxiety scores has been supported in German (Boehnke, Silbereisen, Reynolds, & Richmond, 1986), Jordanian (AL Jabery & Arabiat, 2011), and Nigerian (Pela & Reynolds, 1982) samples, and the RCMAS' concurrent validity with other well-known instruments used to measure anxiety has been well-supported in a French-Canadian sample (Turgeon & Chartrand, 2003). Moreover, the original five-factor structure described by Reynolds and Richmond (1985) has been confirmed in French-Canadian (Turgeon & Chartrand, 2003), Uruguayan (Richmond, Rodrigo, & de Rodrigo, 1988), Spanish (Ferrando, 1994), and Bulgarian (Bidjerano, 2006) samples.

Subsequent to completion of the present study, a new edition of the RCMAS was released. The RCMAS-2 (Reynolds & Richmond, 2008) retains the vast majority of the items from the RCMAS and produces scores that correlate very highly with scores on the original instrument. Consequently, Reynolds and Richmond (2008) asserted that research findings on the RCMAS may be extended to the RCMAS-2 and remain relevant for practitioners and researchers who choose to employ the new edition.

Analyses

Data analysis proceeded from an epidemiological perspective. The focus of the investigation wasRCMAS Total Anxiety scores, given the questionable reliability of the instrument's subscale scores (Ryngala et al., 2005). Mean Total Anxiety scoresand the proportion of clinically significant scores within this sample were

reported. The potential presence of gender, ethnic, and age-related trends in overall anxiety levels were also considered in an attempt to elucidate how these may differ from trends seen in other regions of the world. Additionally, the most and least frequently endorsed items on the RCMAS within this sample were noted.

Common factor analysis was used to validate the factor structure of the RCMAS with the Trinidadian adolescent population. Exploratory factor analysis (EFA) was chosen over confirmatory factor analysis (CFA) because there was insufficient basis to make assumptions about the number of factors and the measured variables associated with them in this population, given that no known studies exist on the topic (Fabrigar, Wegener, MacCallum, & Strahan, 1999). In cases like this, the use of EFA may help prevent confirmation bias from impacting findings (Goldberg & Velicer, 2006). To verify that the data were suitable for factoring, Bartlett's test of sphericity (Bartlett, 1950) and the Kaiser-Meyer-Olkin statistic (Kaiser, 1974) were considered.

The principal axis method of extraction was chosen because of its ability to maximize variance extracted from non-normal data and identify weak factors (Briggs & MacCallum, 2003; Widaman, 1993). Initial communalities were estimated using the squared multiple correlations of the factors with each variable (Gorsuch, 2003). A visual scree test (Cattell, 1966), parallel analysis (Horn, 1965), and minimum average partials (MAP; Velicer, 1976) were used to determine the optimal number of factors to retain (Velicer, Eaton, & Fava, 2000). Consideration was also given to theoretical convergence and parsimony. Given the nature of the structure within the standardization sample (Reynolds & Richmond, 1985), factors were assumed to be correlated in this population as well. Consequently, Promax rotation (Hendrickson & White, 1964) with a k value of 4 was performed (Gorsuch, 1997).

A priori criteria were established for the determination of factors. In keeping with the procedures used in Reynolds and Richmond's (1985) factor analysis of the RCMAS with an American sample, pattern coefficients greater than or equal to 0.25 were considered salient. In order for factors to be considered acceptable, they were required to have at least three salient pattern coefficients, demonstrate adequate internal consistency reliability, and be theoretically sensible.

Results

Descriptive Statistics of RCMAS Scores in Trinidadian Adolescents

Normative data by gender and ethnic group are presented in Table 1. The mean Total Anxiety raw score on the RCMAS was 12.54 (SD = 5.92, N = 886). Based on the recommended clinical cutoff score (19 or above; Montgomery & Finch, 1974; Reynolds & Richmond, 1985), 17% of adolescents were identified as anxious. As expected, gender differences in anxiety levels were present in the full sample, with girls reporting significantlyhigherlevels of anxiety than boys, $F(1, 878) = 45.98$, $p < .01$, $d = .46$. Additionally, a greater proportion of girls demonstrated clinically significant levels of anxiety than boys (22% versus 12%).

Table 1
Mean Total Anxiety Scores on the RCMAS by Gender and Ethnic Group

Group	*N*	*M*	*SD*
Male	395	11.07	5.79
African	98	10.46	4.92
East Indian	170	11.98	6.16
Mixed	113	10.43	5.95
Other	10	8.50	3.95
Female	485	13.72	5.75
African	95	14.19	5.71
East Indian	207	13.32	5.83
Mixed	168	14.05	5.64
Other	11	13.27	6.13
Total	886	12.54	5.92

Note. Total group data includes data from participants who failed to report gender and/or ethnicity.

No main effect for ethnicity was found in mean Total Anxiety scores of the full sample. However, there was a significant gender-by-ethnicity interaction, $F(3, 864) = 3.056$, $p = .03$. As a result, follow-up tests were conducted to evaluate pairwise differences for girls and boys of different ethnic backgrounds. Homogeneity of variance was not assumed and the modified Shaffer method (Shaffer, 1986) was used to control for the presence of Type I error across multiple comparisons. Gender effects were found within the African ($d = .67$), East Indian ($d = .22$), and Mixed ($d = .63$) ethnic groups, with girls scoring significantly higher than boys, but no gender effect could be detected within the Other group.No significant differences in mean Total Anxiety scores were found across ages, and there was no gender-by-age interaction.

The percentage of Trinidadian adolescents endorsing each anxiety item on the RCMAS is displayed in Table 2. The most commonly endorsed items addressed worries about the future and present. The items responded to by the fewest adolescents dealt with physiological anxiety symptoms, including shortness of breath, sleep problems, and nausea. A greater proportion of girls than boys responded positively to every item with the exception of two – item 19 (sweaty hands) and item 31 (hard to keep my mind on academics).

Table 2
Frequency of Endorsement of Anxiety Symptoms in 886 Trinidadian Adolescents

Item	Total % endorsed	Male % endorsed	Female % endorsed
2. Nervous when things don't go right.	76.9	71.1	81.4
22. Worry about future.	67.5	59.7	73.8
1. Trouble making up mind.	65.2	56.2	72.4
37. Worry something bad will happen.	63.7	57.0	69.5
10. Worry what parents will say.	59.4	55.7	62.5
3. Easier for other people.	57.6	54.9	59.6
26. Feelings get hurt.	57.0	45.1	66.4
18. Easy to hurt feelings.	56.5	42.8	67.8
11. Others do not like my behaviors.	55.9	50.4	60.6
9. Easy to get mad.	55.0	49.6	59.0
14. Worry about what others think.	54.6	46.6	61.2
27.Others tell me I'm wrong.	52.1	50.1	53.6
31. Hard to keep my mind on academics.	51.6	54.9	48.7
23. Others are happier.	47.9	47.3	48.5
25. Bad dreams.	43.1	35.4	49.3
34. Nervous.	40.1	31.6	46.6
6. Worry a lot.	39.7	29.9	47.6
21. Tired a lot.	36.9	33.2	39.6
19. Sweaty hands.	35.2	35.7	34.8
29. Wake up scared.	33.3	24.8	40.2
7. Afraid.	31.5	27.3	35.1
30. Worry at night.	31.2	25.3	35.9
33. Wiggle in seat.	29.3	25.6	32.6
35. People are against me.	27.7	24.6	30.3
15. Feel alone.	25.7	21.0	29.3
17. Often feel sick.	22.2	17.2	26.2
13. Hard to get to sleep.	18.8	18.0	19.6
5. Trouble getting breath.	18.3	15.7	20.0

Note. Items condensed and rephrased.

Factor Analysis

Bartlett's test of sphericity (Bartlett, 1950) confirmed that the correlation matrix was not random, $\chi^2 = 6070.56$, $p < .001$, and the Kaiser-Meyer-Olkin statistic

of .88 was substantially greater than the recommended minimum standard of .60 (Kaiser, 1974). Thus the correlation matrix was determined to be factorable.

Multiple methods were employed to estimate the number of factors to retain. A visual scree test implied that retention of six factors would be appropriate. Parallel analysis was performed using random eigenvalues obtained through the Monte Carlo PCA for Parallel Analysis program (Watkins, 2000), and suggested retention of five factors. A minimum average partials procedure was performed using the Factor and Extension Analysis syntax code for SPSS (O'Connor, 2001), and it suggested a two-factor model. Consequently, the six-, five-, four-, three-, and two-factor models were examined in sequence. The six-factor model was rejected due to an insufficient number of salient loadings on the final factor. The four-factor model was rejected due to the presence of five items that failed to load saliently on any factors. In the three- and two-factor models, three items failed to load saliently on any factors. Although items 1 and 9 failed to load saliently in the five-factor model, this model explained a larger amount of the variance in RCMAS scores (27%) than the three- and two-factor models (23% and 20% respectively). The five-factor model also met the predetermined criteria for factor acceptability and was deemed the most adequate for these data.

Pattern coefficients for the five-factor solution are displayed in Table 3. Eight items loaded saliently on the first factor, which appeared to mirror the Worry/Oversensitivity factor described in the U.S. standardization sample. Six items, all of which were designed to capture false self-reporting of an intentional or subconscious nature, loaded ona second factor. Eleven items loaded saliently on a third factor, which appeared to mirror the Physiological Anxiety factor. Seven items loaded saliently on a fourth factor, which appeared to address Social Concern/Concentration subscale. Finally, three items loaded on a final factor that also appeared to reference deceptive responses.

Table 3
Factor Pattern Coefficients for Principal Axis Extraction and Promax Rotation of the Five Factor Structure of the RCMAS in Trinidadian Adolescents (N =886)

Item	Worry	Lie 1	Physio	Social	Lie 2
26. Feelings get hurt.	**.594**	.000	-.095	-.109	-.093
37. Worry something bad will happen.	**.593**	-.009	.066	.000	.079
18. Easy to hurt feelings.	**.589**	-.013	-.056	.017	-.038
22. Worry about future.	**.530**	.018	.026	.018	.011
14. Worry about what others think.	**.477**	-.005	-.085	.159	-.044
10. Worry what parents will say.	**.413**	.036	-.010	.111	.054
2. Nervous when things don't go right.	**.387**	-.048	-.010	.016	.055
7. Afraid.	**.278**	.020	.264	.006	.046
20. Always nice to people.	.003	**.744**	.062	.011	-.053
8. Always kind.	.027	**.733**	-.077	.070	-.053
16. Always good.	-.039	**.594**	-.002	-.016	.052
12. Always have good manners.	.094	**.522**	-.055	-.087	-.025
4. Like everybody.	-.050	**.482**	.025	-.051	.110
24. Always tell the truth.	-.072	**.273**	.062	.003	.140

Cont. Table 3

9. Easy to get mad.	.196	-.209	-.001	.089	.010
17. Often feel sick.	.081	-.029	**.484**	-.160	.039
5. Trouble getting breath.	-.151	-.022	**.440**	.094	.055
21. Tired a lot.	-.103	-.011	**.439**	.169	-.037
30. Worry at night.	.156	.014	**.412**	.082	.009
13. Hard to get to sleep.	-.196	.031	**.407**	.203	-.013
34. Nervous.	.310	.001	**.389**	-.108	-.063
6. Worry a lot.	.223	.019	**.373**	.080	.000
25. Bad dreams.	.184	-.053	**.317**	-.150	-.019
33. Wiggle in seat.	-.120	-.049	**.311**	.110	-.046
19. Sweaty hands.	.012	.034	**.287**	-.079	-.008
29. Wake up scared.	.189	.031	**.272**	-.018	.013
23. Others are happier.	.002	-.051	-.011	**.512**	.009
11. Others do not like my behaviors.	.225	-.036	-.137	**.481**	.040
3. Easier for other people.	.072	.020	-.039	**.473**	-.031
25. Bad dreams.	.048	-.020	.034	**.442**	.062
31. Hard to keep mind on academics.	-.075	-.051	.143	**.419**	-.070
27. Others tell me I'm wrong.	.307	.090	-.041	**.327**	.017
15. Feel alone.	.061	.103	.222	**.313**	-.050
1. Trouble making up mind.	.213	-.116	.044	.231	.025
36. Never lie.	-.015	.006	-.005	-.024	**.765**
28. Never get mad.	.000	-.012	-.011	.022	**.660**
32. Never say what I shouldn't.	.024	.074	.001	-.008	**.492**

Note. Items condensed and rephrased. Salient loadings in bold.

Overall in the Trinidadian sample, 32 of 37 items loaded saliently on the same factors that they had in the original U.S. standardization sample. As in the U.S. sample, the lie scale emerged as two separate factors, with items 4, 8, 12, 16, 20, and 24 comprising one and items 28, 32, and 36 comprising another. Three items (6, 30, and 34) that had been part of the Worry/Oversensitivity scale in the U.S. sample loaded on the Physiological Anxiety scale in the Trinidadian sample; item 34 loaded saliently on both scales, but the loading was higher on the former than the latter. Additionally, item 1 (trouble making up mind) and item 9 (easy to get mad) failed to load saliently on any factors.

Reliability and Validity

Reliability was examined using Cronbach's alpha coefficients as estimates of internal consistency for both the full scale and the five known RCMAS factors. The reliability coefficient for the Total Anxiety score was .85. Coefficients for the Physiological Anxiety, Worry/Oversensitivity, and Social Concerns/Concentration subscales were .58, .79, and .69, respectively. The reliability coefficient for the Lie scale (including both lie factors) was .71.

A large body of research has indicated that highcomorbidity exists between anxiety disorders and depression in adolescents (for a review, see Seligman and

Ollendick, 1998). Consequently, scores on a measure of depression within this sample were used as an indicator of convergent validity. The Reynolds Adolescent Depression Scale (RADS; Reynolds, 1987) was also administered to adolescents in this sample as part of a larger battery of instruments pertaining to various research projects; the order of administration was randomized for each participant. The RADS is a 30-item self-report scale designed to assess depression symptoms in adolescents aged 13-18 (Reynolds, 1987). It was originally normed on 2,460 adolescents in the United States and has since been used to assess depression symptoms within the Trinidadian population (Maharajh et al., 2005). A cut-off raw score of 77 is thought to reflect a level of symptoms associated with a diagnosis of clinical depression (Reynolds, 1987).

RADS data was available for 876 of the 886 adolescents who completed the RCMAS. The mean raw score on the RADS was 61.82 (*SD* = 14.84). RCMAS scores and RADS scores were moderately correlated in the Trinidadian sample, with a Pearson coefficient of .69. Based on previous research (Brady & Kendall, 1992), a comorbidity rate of about 16 to 62% was expected. The actual comorbidity rate in the Trinidadian sample was within this range, with 50% of adolescents identified as displaying clinically significant anxiety symptoms also displaying a level of depressive symptoms associated with clinical depression.

Discussion

The present study examined anxiety disorder symptoms in Trinidadian adolescents using the RCMAS. One goal was to provide normative data for this population. The level of Total Anxiety scores (*M* = 12.54, *SD* = 5.92) was greater than those yielded in studies of youth from China (*M* = 9.09, *SD* = 5.27; Dong et al., 1994), Australia (*M* = 10.73, *SD* = 5.81; Boyd et al., 2000), and the United States (*M* = 11.70, *SD* = 6.21; Reynolds & Richmond, 1985). As a group, Trinidadian adolescents scored similarly to Nigerian youth (*M* = 12.5, *SD* = 4.6/4.7; Pela & Reynolds, 1982), and considerably lower than Jordanian youth (*M* = 18.66, *SD* = 5.97; AL Jabery & Arabiat, 2011). Additionally, 17% of the Trinidadian adolescents exhibited clinically significant levels of anxiety, a finding well within the range of prevalence rates yielded from studies in other nations that have also employed the RCMAS as an estimate of overall anxiety levels (Boyd et al., 2000; Dong et al., 1994; Stavrakaki et al., 1991).

Anxiety Symptoms

Data were also examined for the presence of gender, ethnicity, and age-based trends. As was expected given the wealth of existing research on gender-based differences in anxiety levels (Costello et al., 2004; Lewinsohn et al., 1993; Yonkers & Gurguis, 1995), girls exhibited significantly greater levels of anxiety than boys. Moreover, nearly twice as many girls as boys met criteria for displaying clinically significant anxiety symptoms. However, anticipated differences across ethnic and age groups did not emerge. The lack of variance in overall anxiety levels across ethnic groups within the nation is perhaps unsurprising given the conflicting

research on the presence of such differences in nations like the United States (Reynolds & Richmond, 1978; Pina & Silverman, 2004), as well as the lack of ethnic differences in levels of adolescent depression in Trinidad and Tobago (Maharajh et al., 2006). The absence of significant differences across age groups is also unremarkable given the discordance in existing research from other countries (Boyd et al., 2000; Lewinsohn et al., 1998). As the RCMAS does not purport to measure all dimensions of anxiety nor identify specific types of anxiety disorders (e. g., obsessive-compulsive disorder, social anxiety disorder), it remains possible that more complex ethnic differences could exist between groups, and practitioners working within this population should still be cognizant of the need for culturally responsive identification and treatment of anxiety. Even so, our findings imply that within Trinidad and Tobago, gender is a far better predictor of an adolescent's overall anxiety level than ethnicity or age.

Finally, as an extension of our goal to obtain normative anxiety data for the Trinidadian adolescent population, the most and least commonly endorsed items within this population were analyzed. The items endorsed most often in this population –item 2 (nervous when things don't go right), item 22 (worry about future), and item 1 (trouble making up mind)– were also among the most frequently endorsed items in the original U.S. standardization sample (Reynolds & Richmond, 1985), although none were ranked within the top five most endorsed items in research with Japanese and German youth (Essau, Sakano, Ishikawa, & Sasagawa, 2004). Within the Trinidadian sample, four of the top five items were thought to tap Reynolds and Richmond's (1985) Worry and Oversensitivity dimension of anxiety. Once again, similar patterns can be seen in U.S. youth (Reynolds & Richmond, 1985) but not in German or Japanese youth (Essau et al., 2004). Though one must always be prudent in drawing comparisons at the item level, our data imply that the response patterns of Trinidadian adolescents may be more similar to those of North American youth than European or Asian youth, and that worrying is the most common manifestation of anxiety within this population.

Structural Validity of the RCMAS

A second purpose of the study was to validate the RCMAS for use with Trinidadian youth.The original five-factor model described by Reynolds and Richmond (1985) appears to be an adequate, if imperfect, fit for the Trinidadian adolescent population. The vast majority of items behaved as they had in the U.S. standardization sample, but three items that Reynolds and Richmond considered part of the Physiological Anxietyscale (items 6, 30, and 34) instead loaded saliently on the Worry/Oversensitivity scale in the Trinidadian sample. Although all of the other items on the Worry/Oversensitivity scale seemed to address specific worries (i.e., worrying about what other people will think), the three items that loaded abnormally on the Physiological scale appeared to address more general feelings of anxiety and nervousness (i.e., worrying a lot of the time). Two of these items (30 and 34) also behaved similarly in samples of Bulgarian (Bidjerano, 2006) and Uruguayan (Richmond et al., 1988) youth, suggesting that the expression of anxiety and, more specifically, therelationship between generalized and specific worries

may be different across cultural groups. Additional structural abnormalities occurred with items 1 and 9, which did not load saliently on any factor. It is important to note that these items also behaved problematically in Reynolds and Richmond's (1985) original U.S. standardization sample. Though conceptualized as part of the Physiological Anxiety scale, both items failed to meet Reynolds and Richmond's criteria for salient loadings. Given the anomalous behavior of these items in both samples, and the otherwise strong similarities between the solutions derived from the Trinidadian and U.S. samples, the U.S. factor structure appears to be adequate for use with the Trinidadian population.

Reliability

Our findings also support the use of the RCMAS in this population with regard to its reliability. The internal consistency of the Total Anxiety scores exceeded that of the standardization sample (Reynolds & Richmond, 1985), though estimates for the subscales were considerably lower, particularly for the Physiological Anxiety scale. This appears to be a common theme among international studies of the psychometric properties of the RCMAS (e. g., AL Jabery & Arabiat, 2011; Wilson, Chibaiwa, Majoni, Masukume, & Nkoma, 1990). Overall, our findings echo Ryngala et al.'s (2005) assertions regarding the interpretation of RCMAS results and imply that while the Total Anxiety score appears to be a consistent indicator of anxiety disorder symptoms, caution should be taken when interpreting subscale scores in this population.

Concurrent Validity

Total Anxiety scores also demonstrated strong concurrent validity with scores on a measure of depression. In addition to providing support for the psychometric utility of the RCMAS in this population, the comorbidity data yielded by our study imply that the strong relationship between anxiety and depression in youth – a relationship that has been well-documented in research from Asia (Ishikawa, 2009), Europe (Essau, 2003), and the United States (Brady & Kendall, 1992) – also holds true within Trinidad and Tobago. This information is particularly important given that adolescents who experience both anxiety and depression tend to experience greater psychological distress and maybe more likely to seek psychological services than their peers who experience only one disorder (Essau, 2003). In these comorbid cases, adolescents tend todevelop the anxiety disorder prior to developing the depressive symptoms (Rohde, Lewinsohn, & Seeley, 1991). Consequently, our findings on normative rates of anxiety within the Trinidadian adolescent population have significant implications for the provision of mental health services. If clinically significant levels of anxiety can be detected using an empirically supported and locally validated tool like the RCMAS and intervention can be applied prior to the onset of depressive symptoms, youth may be less likely to require psychological services in the long-run.

Limitations

One potential limitation of this study pertains to the age and scope of the data analyzed. Data were collected in 2000 as part of a large project to obtain normative data on the Trinidadian adolescent population. Though the demographics of Trinidad and Tobago have changed little in the intervening years (U.S. Central Intelligence Agency, 2011), it remains possible that the manifestation of anxiety symptoms within this population may have changed over time. Additionally, it is important to note that although the RCMAS is an instrument developed for use with both children and adolescents, our sample only included youth 11 years of age or older. To facilitate broad use of the tool with this population, future research should include validation of the RCMAS with younger Trinidadian children.

Another limitation relates to the categorization of ethnicity used for the study. As it would have been impossible to include categories to represent every ethnic background present in Trinidad and Tobago, participants were asked to report as African, East Indian, Mixed, or Other. Notably, the other category was the only category in which no gender effect could be detected. This is unsurprising given the small number of participants within this subcategory, but it does prompt questions about the manifestation of anxiety symptoms in this group. Given the ethnic makeup of Trinidad and Tobago, the group could have included individuals of Syrian/Lebanese, Chinese, or White/Caucasian descent (Caricom Capacity Development Programme, 2009), each of which constitutes less than 1% of the population in Trinidad. Future research could address the presence of anxiety disorder symptoms within these subgroups and whether or not trends in symptoms may differ from those seen in these cultural groups living within other nations.

Finally, it is important to note that anxiety is a multifaceted construct measurable in a multitude of different ways. Given the constraints and purpose of this study, we selected a brief, empirically validated self-report scale with a long history of use with diverse populations to gain an estimate of the prevalence of anxiety disorder symptoms. Caution must be taken when directly comparing prevalence estimates obtained from use of this measure with rates obtained through different measurement methods. Even when comparing statistics across studies using the RCMAS, one must consider that differences in the composition of the samples from which scores were yielded. For example, Reynolds and Richmond (1985) have noted that RCMAS Total Anxiety scores tend to be significantly higher for younger children than for older children and adolescents; consequently, samples including younger age groups in overall prevalence rates are likely to exhibit higher Total Anxiety scores than samples limited to adolescents.

Conclusion

The present study used the RCMAS to examine anxiety disorder symptoms in Trinidadian adolescents with the goals of obtaining normative data for this population, investigating potential trends within that data, and validating the

RCMAS for future use with Trinidadian youth. In presenting descriptive data and demonstrating that the RCMAS is an appropriate tool for understanding anxiety within this population, our results have provided a basis for future work with Trinidadian youth.

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