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An analysis of the RCMAS lie scale in a clinic sample of anxious children☆

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Abstract

Examined Revised Children's Manifest Anxiety Scale (RCMAS) Lie scores in a sample of 284 anxious children. Lie scores were examined in relation to children's age, ethnicity/race, and gender, and in relation to Total Anxiety scores. The utility of Lie scores also was examined in terms of whether they were predictive of children's anxiety levels as rated by children themselves, parents, and clinicians. Between-group differences in children's Lie scores were examined as well. Results indicated that younger children had significantly higher Lie scores than older children, and Hispanic American children had significantly higher Lie scores than European American children. There were no significant gender differences in Lie scores, and no significant relation was found between RCMAS Lie scores and Total Anxiety scores for the total sample. Subgroup analyses indicated that Lie scores were predictive of children's anxiety levels. Results also indicated that Lie scores were significantly different between children who presented with anxiety disorders and children who presented with anxiety and externalizing disorders. Findings are discussed in terms of the usefulness of RCMAS Lie scores. © 2001 Elsevier Science Inc. All rights reserved.

Keywords: Anxiety; Anxiety disorders; Children; RCMAS; Lie scores; Hispanic

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1. Introduction

The Revised Children's Manifest Anxiety Scale (RCMAS) is one of the most frequently used anxiety self-report measures in childhood anxiety research, with ample studies supporting its psychometric properties (see Reynolds & Richmond, 1985). Research findings further show that RCMAS Total Anxiety scores can be used for screening purposes and are sensitive to clinical change in treatment outcome research (e.g., Dadds, Spence, Holland, Barrett, & Laurens, 1997; Kendall, 1994; Kendall, Flannery-Schroeder, Panichelli-Mindel, & Southam-Gerow, 1997; Silverman, Kurtines, Ginsburg, Weems, Rabian, et al., 1999; Silverman, Kurtines, Ginsburg, Weems, White Lumpkin, et al., 1999). The RCMAS also offers another advantage that sets it apart from most other children's self-report measures in that the RCMAS contains not only a Total Anxiety scale but also a Lie scale. Containing items such as, "I never get angry," "I like everyone I know," and "I am always kind," the Lie scale is often used as an indicator of social desirability (Dadds, Perrin, & Yule, 1998; Reynolds & Richmond, 1985) and/or defensiveness (Joiner, 1996; Joiner, Schmidt, & Barnett, 1996a; Joiner, Schmidt, & Schmidt, 1996b), reflecting a tendency to present oneself in a favorable light, and/or deny flaws and weaknesses that others are usually willing to admit.

Despite the widespread use of the RCMAS in clinic and research settings, concerns have been raised about its diagnostic utility (or lack thereof), as RCMAS Total Anxiety scores have not been found to differ between diagnostic groups of children (e.g., children with anxiety disorders versus children with attention deficit hyperactivity disorder; Perrin & Last, 1992). This has spurred the development of new self-report measures of childhood anxiety, such as the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997) and the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, & Stallings, 1997). These new measures are welcome additions to the field, and are likely to play an increasingly important role in future research efforts. Nevertheless, because the RCMAS is likely to remain a widely used measure, this study investigated several issues with respect to it, focusing particularly on its Lie scale.

Thus, the purpose of the present study was to address the following issues with respect to the RCMAS; none of which have been addressed previously with clinic samples of anxious children. First, we examined whether Lie scores vary as a function of certain child characteristics, including gender, age, and ethnicity/race. Second, we examined the relation between Lie scores and Total Anxiety scores in different subgroups of children (e.g., younger, older, boys, girls, European American, and Hispanic American). Third, we examined whether Lie scores are predictive of the child's anxiety. Finally, we examined between-group differences in children's Lie scores in terms of primary

diagnoses and patterns of comorbid diagnoses. Some background information follows with respect to each of these issues.

1.1. Lie scale scores and child characteristics

Most of the studies that have examined RCMAS Lie scores and child characteristics have used community samples. These studies found no significant mean differences in Lie scores as a function of gender (Hagborg, 1991; Reynolds & Richmond, 1978). A recent community study conducted in Queensland, Australia, however, found that among younger children only, girls had significantly higher RCMAS Lie scores than boys (Dadds et al., 1998). In terms of age, community studies have found that younger children have significantly higher RCMAS Lie scores than older children (Dadds et al., 1998; Reynolds & Richmond, 1978). In terms of ethnicity/race, community studies have found that African American children have significantly higher Lie scores than European American children (Reynolds & Richmond, 1978). No study has examined, however, whether Lie scores vary in other ethnic/racial groups, such as Hispanics. This study therefore contributes to the empirical/clinical research literature by examining whether Lie scale scores varied between boys and girls, younger and older children, and between European American and Hispanic American children, using a clinic sample of anxious children. If differences do emerge in children's Lie scores as a function of any of the above child characteristics (e.g., younger children), then this would suggest that clinicians may need to either consider, or place increased emphasis on, alternative sources when assessing child anxiety for a child who possesses that particular characteristic.

1.2. Lie scale scores and Total Anxiety scores

In terms of the relation between RCMAS Lie and Total Anxiety scores, studies with community samples have found no significant relation between the two (e.g., Dadds et al., 1998; Hagborg, 1991; Reynolds, 1982). We are aware of only one clinic study that reported on the relation between the RCMAS Lie and Total Anxiety scale scores (Joiner et al., 1996b). Joiner et al. (1996b) used a sample of child and adolescent psychiatric inpatients ($N=96$; ages 8 to 16 years) for whom depressive disorders, disruptive disorders, and anxiety disorders were most prevalent (44.7%, 13.7%, and 11.8%, respectively). A statistically significant negative correlation ($r=-.21$) was found between the RCMAS Lie and Total Anxiety scores.

Because clinicians and researchers who use the RCMAS usually obtain a Total Anxiety score and a Lie score for each youngster, we were interested in examining the relation between Lie scores and Total Anxiety scores for the total sample and for different subgroups of children (e.g., younger, older, boys, girls, European American, and Hispanic American). Examining this issue was of

interest because it has been suggested high Lie scores are to be viewed as indicators of social desirability and/or defensiveness. (i.e., Dadds et al., 1998; Joiner, 1996; Joiner et al., 1996a; Joiner et al., 1996b; Reynolds & Richmond, 1985). Moreover, knowing whether Lie scores and Total Anxiety scores are negatively related is useful information because it may be that children who report elevated Lie scores underreport their anxiety, in which case clinicians and researchers may want to rely more on the information reported by other sources such as parents and/or teachers.

1.3. Lie scale scores and predicting anxiety in children

We are aware of only one study that examined whether RCMAS Lie scale scores are useful in predicting children's levels of anxiety (Dadds et al., 1998). Using a large community sample ($N = 1786$; ages 7–14 years), Dadds et al. (1998) asked children to complete the RCMAS, and teachers to rate the children as anxious or not anxious. Results indicated that, for girls only, both RCMAS Total Anxiety and Lie scores were predictive of teachers' ratings of "anxious" and "non-anxious" children. The findings of Dadds et al. provide important initial information about the potential utility of the RCMAS Lie scores in that they showed that Lie scores are predictive of how other sources (i.e., teacher) view these children in terms of anxiety (e.g., present/absent).

Similar to Dadds et al. (1998), we were interested in examining whether RCMAS Lie scores would predict children's self-rated anxiety levels beyond parents' ratings of their children's anxiety levels. We examined this issue with parents as they are the ones (usually mothers) who seek help for their children's problems in clinic settings and who are generally most involved in the assessment process. If RCMAS Lie scores are found to be predictive of children's self-rated anxiety levels beyond parents' ratings of their children's anxiety levels, this would provide additional evidence that RCMAS Lie scores are meaningful. More specifically it would suggest that despite reporting low levels of anxiety, if a child's Lie score is elevated, the child can be anxious, as corroborated by the parent.

1.4. Lie scale scores and between-group differences

The utility of the RCMAS's Lie scale was also examined by evaluating between-group differences with respect to children's and parents' Total Anxiety and Lie scores using the RCMAS and the RCMAS-Parent version (RCMAS-P), respectively, across primary diagnoses and patterns of comorbid diagnoses. Although studies have examined this issue in regard to the RCMAS Total Anxiety scale and have not found significant differences between groups (e.g., anxiety disorders versus attention deficit hyperactivity disorder; Perrin & Last, 1992), there has been no attempt to explore the utility of the Lie scale using the most current diagnostic classification system, the DSM-IV (APA, 1994).

As far as we know, no study has examined whether there are any differences between the Lie scale scores of children who present with various anxiety disorders. Examining whether Lie scores are different across disorders is important as a way to determine whether the scale has utility in assisting differential diagnosis. Thus, in the present study we compared children's and parents' Total Anxiety and Lie scores for the following diagnostic groups: specific phobias, overanxious and/or generalized anxiety disorder, separation anxiety disorder, and social phobia. Although we might hypothesize that children with social anxiety-based disorders (i.e., overanxious and/or generalized anxiety disorder and social phobia) would have higher Lie scale scores than children with specific phobias and separation anxiety disorder, in light of the absence of previous research on this issue, we note the exploratory quality of this hypothesis. In addition, we examined whether Lie scale scores were different for children with various comorbid patterns; namely, comorbid anxiety disorders, comorbid anxiety + disruptive disorders, and comorbid anxiety + depressive disorders. These particular comorbid patterns were studied in light of their high prevalence in youth (see Angold, Costello, & Erkanli, 1999; Kovacs & Devlin, 1998; Last, Perrin, Hersen, & Kazdin, 1992), though these analyses also were viewed as primarily exploratory in nature.

2. Method

2.1. Participants

Participants were 284 children and their parents who presented to the Child and Family Psychosocial Research Center, Child Anxiety and Phobia Program (CAPP), at Florida International University, Miami. Children in this sample were referred to the program by school counselors, mental health professionals, pediatricians, or by self-referral. The sample was comprised of 122 girls and 162 boys. The children were 6 to 17 years old, with an average age of 10.4 years. In terms of ethnicity/race, 60% were European American, 38% were Hispanic American, and 2% of the sample did not report ethnic information. In terms of family income, 20.9% had incomes of $19,000 or less; 16.8% had incomes from $19,000 to $30,000; 16.4% had incomes from $30,000 to $40,000; and 45.9% had incomes over $40,000. All children met DSM criteria for a primary diagnosis of an anxiety disorder using the Anxiety Disorders Interview Schedule for Children (ADIS for DSM-IV: C/P; Silverman & Albano, 1996). Thirty-eight percent of the children met diagnostic criteria for a primary diagnosis of specific phobia, 20% met for generalized anxiety disorder and/or overanxious disorder[1], 14% for separation anxiety disorder, 12% for social phobia, and the remaining

[1] The Anxiety Disorders Interview Schedule for Children (Silverman & Albano, 1996) contains an experimental diagnostic section that assesses DSM-III-R Overanxious Disorder.

16% for other disorders. Comorbid secondary diagnoses in this sample were common (80%). The most frequent secondary diagnoses were generalized anxiety disorder and/or overanxious disorder (19%) specific phobia (18%), separation anxiety disorder (13%), and social phobia (7%).

2.2. Measures

2.2.1. Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978)

The RCMAS is a 37-item scale designed to measure anxiety symptoms in children. Twenty-eight items are summed yielding a Total Anxiety score. The other nine items also are summed to yield a Lie score. Children respond either "Yes" or "No" to all 37-items. The RCMAS has been found to have satisfactory psychometric properties. For example, Pela and Reynolds (1982) reported excellent test–retest reliability (Total Anxiety scale: $r = .98$; Lie scale $r = .94$) using a 3-week interval. In terms of construct validity, factor analytic studies have been generally consistent in reporting a three-factor structure for the Total Anxiety scale plus the Lie scale (Reynolds & Paget, 1981; Reynolds & Richmond, 1979; Scholwinski & Reynolds, 1985). The RCMAS Lie scale is similar to the MMPI-Lie scale (Hathaway & McKinley, 1943) and often is viewed as a measure of social desirability (Dadds et al., 1998) and/or defensiveness (e.g., Joiner, 1996). More specifically, high scores on the scale are seen as reflecting a tendency to present oneself in a favorable light, and to deny flaws and weaknesses that most people are willing to admit.

2.2.2. Revised Children's Manifest Anxiety Scale-Parent version

As reported by other investigators working in the child anxiety area with similar self-report measures, parents rated the occurrence of anxious symptoms in their children using the RCMAS-P (e.g., Kendall, 1994; Strauss, Lease, Kazdin, Dulcan, & Last, 1989). The stem of each item in the RCMAS was changed from "I. . ." to "My child. . ." (e.g., "My child worries about what is going to happen"). In this study, coefficient alphas for the RCMAS-P Total Anxiety scores and Lie scores were .85 and .82, respectively. These alphas are similar to those obtained with our sample for the child version (i.e., .89 for the Total Anxiety and .77 for the Lie scores).

2.3. Procedure

As part of a comprehensive assessment, children and parents completed a semistructured interview and a packet of questionnaires about the child's emotional and behavioral functioning, which included the RCMAS and RCMAS-P. Younger children were assisted in the completion of questionnaires by a trained research assistant.

The ADIS for DSM-IV: C/P (Silverman & Albano, 1996) was administered to all referred children and their parents. ADIS for DSM-IV: C/P is a semistructured diagnostic interview that emphasizes anxiety disorders and other major childhood

disorders, including the affective and the externalizing disorders according to DSM criteria (APA, 1994). Test–retest reliability of the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Version (ADIS for DSM-IV: C/P) was examined using a test–retest interval of 7 to 14 days in a subsample of 62 children (ages 6–17) and their parents. Reliability of anxiety disorder diagnoses revealed that the ADIS-C/P is a highly reliable instrument for deriving DSM-IV anxiety disorder diagnoses in children. For example, the ADIS-C/P was found to have excellent reliability for deriving composite diagnoses of separation anxiety disorder (kappa coefficient of .84), social phobia (kappa coefficient of .92), specific phobia (kappa coefficient of .81), and generalized anxiety disorder (kappa coefficient of .80) (Silverman, Saavedra, & Pina, 2001).

All diagnostic interviews were conducted by either the program director (WKS), a postdoctoral psychologist, or advanced doctoral students in psychology. Diagnosticians were trained by observing live and videotaped interviews. Initial discrepancies were discussed to reach agreement on five child–parent interviews before diagnosticians conducted an interview by themselves. In cases of multiple diagnoses, the relative impact or interference of each diagnosis was used for ascertaining the primary diagnosis, the secondary, etc., as delineated in the ADIS-C guide (see Albano & Silverman, 1996).

3. Results

3.1. Lie scale scores and child characteristics

Means and standard deviations for both the RCMAS and the RCMAS-P Lie and Total Anxiety scores are presented in Table 1. A 2 (age: 6 to 10 years and 11 to

Table 1
Means and standard deviations for RCMAS and RCMAS-P Lie and Anxiety scale scores by age, gender, and ethnicity/race

Groups	*n*	RCMAS-Anxiety mean	(SD)	RCMAS-P Anxiety mean	(SD)	RCMAS-Lie mean	(SD)	RCMAS-P Lie mean	(SD)
Total sample[a,b]	284	12.42	(6.76)	14.11	(6.75)	3.88	(2.55)	2.99	(2.57)
Younger[a,b]	156	12.00	(6.60)	14.17	(5.48)	4.41	(2.44)	3.19	(2.74)
Older[b]	128	12.93	(6.93)	14.04	(6.08)	3.24	(2.53)	2.75	(2.34)
Boys[a,b]	162	12.90	(6.60)	14.37	(6.10)	3.85	(2.55)	2.90	(2.61)
Girls[a,b]	122	11.77	(6.94)	13.76	(5.24)	3.92	(2.56)	3.11	(2.53)
European American[a,b]	173	12.14	(6.46)	13.52	(5.71)	3.43	(2.44)	2.40	(2.38)
Hispanic American[a,b]	107	12.86	(7.32)	15.09	(5.71)	4.55	(2.57)	3.82	(2.60)

Children between the ages of 6 and 10 years were grouped in the younger group and children between the ages of 11 and 17 years were grouped in the older group. Four of the families did not report information of their ethnicity/race.

[a] Means for the RCMAS-Anxiety and RCMAS-P Anxiety are significantly different at the .05 level.

[b] Means for the RCMAS-Lie and RCMAS-P Lie are significantly different at the .05 level.

17 years) × 2 (ethnicity/race: European American and Hispanic American) × 2 (gender: boys and girls) multiple analysis of variance (MANOVA) was conducted to examine whether RCMAS and RCMAS-P Lie scale scores varied as a function of child characteristics. The main effect for age was significant [$F(2, 271) = 4.69$, $p < .010$] (Pillais trace criterion F approximation is reported for this and subsequent MANOVA findings). The main effect for ethnicity/race was significant [$F(2, 271) = 13.08$, $p < .001$]. Main effects for gender and the interactions were not significant. In terms of age, follow-up univariate tests indicated age differences for the RCMAS Lie scores. Younger children reported significantly higher Lie scores than older children [$F(1, 272) = 9.34$, $p < .002$]. Univariate tests also indicated ethnicity/race differences for both RCMAS and RCMAS-P Lie scores; that is, Hispanic American children reported significantly higher RCMAS Lie scores than European American children [$F(1, 272) = 14.22$, $p < .001$]. Parents of Hispanic American children also reported significantly higher RCMAS-P Lie scores than parents of European American children [$F(1, 272) = 19.23$, $p < .001$]. Because significant differences were found as a function of age and ethnicity/race, all subsequent analysis were conducted for these four groups separately.

3.2. Lie scale scores and Total Anxiety scores

The correlation coefficient between the RCMAS Lie and the RCMAS Total Anxiety scores for the total sample was nonsignificant ($r = -.09$, $p = .112$); however, the correlation coefficient between the RCMAS-P Lie and the RCMAS-P Total Anxiety scores was significant ($r = -.13$, $p = .028$). The correlation coefficient between the RCMAS and the RCMAS-P Lie scores was significant ($r = .34$, $p = .001$), likewise the correlation coefficient between the RCMAS and the RCMAS-P Total Anxiety scores was significant ($r = .24$, $p = .001$). Table 2 presents further information from the computed correlation matrix for younger, older, European American, and Hispanic American children.

3.3. Lie scale scores and predicting Total Anxiety scores

To test the hypothesis that the RCMAS Lie scale scores would predict variance in children's self-rated anxiety beyond parents' ratings of their children's anxiety, hierarchical regression analysis were conducted using the RCMAS Total Anxiety score as the criterion variable and the RCMAS-P Total Anxiety, RCMAS Lie, and RCMAS-P Lie scores as predictors. Again, four sets of analysis were conducted. First, the data from the group of younger children (6–10 years old) were used. Specifically, the RCMAS-P Total Anxiety scores were added into the equation in Step 1, the RCMAS Lie scores were entered in Step 2, and the RCMAS-P Lie scores were entered in Step 3. Results indicated that only RCMAS Lie scores predicted a significant amount of the variance beyond the RCMAS-P Total Anxiety scores (R^2 change = .031, $p < .05$). Next, using the data of the older children (11–17 years old) the RCMAS-P Total Anxiety scores were added into

Table 2
Group correlations between the RCMAS and RCMAS-P Lie and Anxiety scale scores by age, gender, and ethnicity/race

Scale	1	2	3	4
Correlations for the total sample (N = 284)				
1 RCMAS-Lie	–	– .09	– .01	.34**
2 RCMAS-Total Anxiety			.24**	– .09
3 RCMAS-P Total Anxiety				– .13*
4 RCMAS-P Lie				–
Correlations for the younger (n = 156) and older (n = 128) children				
1 RCMAS-Lie		– .16*	.07	.24**
2 RCMAS-Total Anxiety	.01		.19*	– .15*
3 RCMAS-P Total Anxiety	– .11	.30**		– .07
4 RCMAS-P Lie	.46**	– .01	– .21*	
Correlations above the diagonal are for younger children and those below are for older children.				
Correlations for the boys (n = 162) and girls (n = 122)				
1 RCMAS-Lie		– .03	– .02	.35**
2 RCMAS-Total Anxiety	– .17		.27**	– .10
3 RCMAS-P Total Anxiety	.01	.21*		– .14
4 RCMAS-P Lie	.32**	– .08	– .10	
Correlations above the diagonal are for boys and those below are for girls.				
Correlations for the European American (n = 173) and Hispanic American (n = 107) children				
1 RCMAS-Lie		– .22**	– .07	.27**
2 RCMAS-Total Anxiety	.04		.23**	– .14
3 RCMAS-P Total Anxiety	– .03	.26**		– .17*
4 RCMAS-P Lie	.33**	– .07	– .17	
Correlations above the diagonal are for European American children and those below are for Hispanic American children.				

Children between the ages of 6 and 10 years were grouped in the younger group and children between the ages of 11 and 17 years were grouped in the older group.

* $p < .05$

** $p < .01$

the equation in Step 1, the RCMAS Lie scores were entered in Step 2, and the RCMAS-P Lie scores were entered in Step 3. Results indicated that neither the RCMAS Lie nor the RCMAS-P Lies scores predicted a significant amount of the variance beyond the RCMAS-P Total Anxiety scores (R^2 change = .002) for the older children.

In terms of ethnicity/race, the data pertaining to the group of European American children were used where the RCMAS-P Total Anxiety scores were added into the equation in Step 1, the RCMAS Lie scores were entered in Step 2, and the RCMAS-P Lie scores were entered in Step 3. Results indicated that only the RCMAS Lie scores predicted a significant amount of the variance beyond the RCMAS-P Total Anxiety scores (R^2 change = .042, $p < .05$). Lastly, the data of Hispanic American children were used where the RCMAS-P Total Anxiety

scores were added into the equation in Step 1, the RCMAS Lie scores were entered in Step 2, and the RCMAS-P Lie scores were entered in Step 3. Results indicated that the RCMAS and RCMAS-P Lie scores did not predict a significant amount of the variance beyond the RCMAS-P Total Anxiety scores (R^2 change = .02).

3.4. Lie scale scores and between-group differences

Four diagnostic groups [primary diagnoses of: specific phobia ($n = 107$), overanxious disorder and/or generalized anxiety disorder ($n = 58$), separation anxiety disorder ($n = 41$), and social phobia ($n = 33$)] were compared with respect to children's and parents' Total Anxiety and Lie scores using the RCMAS and RCMAS-P, respectively. First, chi-square analyses indicated significant differences among these four diagnostic groups with respect to age [$\chi^2 = (3) = 18.32$, $p < .001$] but not gender and ethnicity/race. MANOVAs were then conducted using the children's RCMAS Lie and Total Anxiety scores as well as RCMAS-P Lie and Total Anxiety scores as dependent variables and the four diagnostic groups as the quasi-independent variable. Because the chi-square analysis indicated significant differences in terms of age for the four diagnostic groups, separate MANOVAs were conducted for the younger and the older children. The MANOVA was significant for the younger children only [$F(12, 402) = 1.80$, $p < .05$]. Univariate tests indicated significant differences between at least two of these four diagnostic groups in terms of their RCMAS-P Total Anxiety scores. Scheffe's multiple comparison test revealed that parents of younger children in the overanxious and/or generalized anxiety disorder diagnostic groups rated their children's anxiety significantly higher (*mean* = 16.16, *SD* = 4.36) than parents of younger children in the specific phobia group (*mean* = 12.50, *SD* = 5.87).

Three comorbid groups [comorbid anxiety disorders ($n = 195$), comorbid anxiety + disruptive disorders ($n = 62$), and comorbid anxiety + depressive disorders ($n = 21$)] also were compared with respect to children's and parents' Total Anxiety and Lie scores using the RCMAS and RCMAS-P, respectively. First, chi-square analyses indicated significant differences among the three groups with respect to gender [$\chi^2(3) = 16.27$, $p < .001$] but not age and ethnicity/race. MANOVAs were then conducted using the children's RCMAS Lie and Total Anxiety scores as well as RCMAS-P Lie and Total Anxiety scores as dependent variables and the three comorbid groups as the quasi-independent variable for boys and girls.

The MANOVA was significant for boys [$F(8, 308) = 3.23$, $p < .01$]. Univariate tests indicated significant differences among these four diagnostic groups in terms of their RCMAS-P Total Anxiety and Lie scores. Scheffe's multiple comparison test revealed that boys in the comorbid anxiety + disruptive disorders group had significantly higher RCMAS-P Total Anxiety scores (*mean* = 16.30, *SD* = 5.36) than boys in the comorbid anxiety disorders group (*mean* = 13.07, *SD* = 6.14). In terms of RCMAS-P Lie scores, parents' Lie scores were signifi-

cantly higher for boys in the comorbid anxiety disorders group (*mean* = 3.23, *SD* = 2.69) than boys in the comorbid anxiety + disruptive disorders group (*mean* = 2.12, *SD* = 2.25).

The MANOVA also was significant for girls [$F(8, 228) = 2.87$, $p < .01$]. Univariate tests indicated significant differences among these four diagnostic groups in terms of their RCMAS Total Anxiety and Lie scores as well as in terms of their RCMAS-P Total Anxiety scores. However, Scheffe's multiple comparison test revealed significant differences between the comorbid groups only in terms of their RCMAS Lie and RCMAS-P Total Anxiety scores. Specifically, girls in the comorbid anxiety disorders group had significantly higher RCMAS Lie scores (*mean* = 4.30, *SD* = 2.46) than the girls in the comorbid anxiety + disruptive disorders group (*mean* = 2.41, *SD* = 2.22). Different from boys, however, RCMAS-P Total Anxiety scores were significantly higher for girls in the comorbid anxiety + depressive disorders group (*mean* = 17.17, *SD* = 4.49) than for girls in the comorbid anxiety disorders group (*mean* = 13.14, *SD* = 5.12).

4. Discussion

Although the RCMAS is one of the most widely used self-report measures in childhood anxiety research, there is a paucity of research on the utility of its Lie scale using clinic samples of anxious children. The present study fills this gap in the literature by addressing several issues with respect to the Lie scale and clinical child anxiety.

RCMAS Lie scores were first examined in the context of gender, age, and ethnicity/race. Consistent with previous findings (e.g., Hagborg, 1991; Reynolds & Richmond, 1978), results indicated no significant differences in RCMAS Lie scores as a function of gender. However, significant differences in RCMAS Lie scores were found as a function of age and ethnicity/race. In terms of the age findings, younger children had significantly higher RCMAS Lie scores (a mean of 4.41) than older children (a mean of 3.24). As others have noted with nonreferred children, this generally higher endorsement of Lie items on the part of younger children than older children may be an indicator of an increase with age in children's abilities to accurately report their behavior versus their ideas about their behavior (e.g., Dadds et al., 1998; Reynolds & Richmond, 1978, 1985). A further possibility is that younger children's endorsement of Lie items may reflect a developmentally appropriate finding. For example, younger children may be more likely than older children to "like everyone [they] know" (Item 4 on the Lie Scale). Further research examining these possibilities would be useful.

In terms of the ethnicity/race, the findings indicated that Hispanic Americans had significantly higher RCMAS and RCMAS-P Lie scores than European Americans. Although we are not aware of previous studies that have compared RCMAS Lie scale scores of Hispanic American children with those of non-Hispanic American children, previous studies using community samples have

found that African American children scored higher than European American children on the Lie scale. Similarly, in the present study, Hispanic American children and their parents scored higher than European American children and their parents on the Lie scale. Although it would be premature to provide a definitive explanation for these differences, it might be the case that the Hispanic Americans' high endorsement of Lie items such as "I am always kind," "My child is always kind," "I like everyone I know," and "My child likes everyone he/she knows" reflect the collectivistic qualities of this culture. In fact, the collectivism of Hispanics has been noted as an important factor that fosters certain qualities, such as being agreeable and pleasant (Triandis, Marin, Lisansky, & Betancourt, 1984). This is an important finding for both clinicians and researchers because if the Lie scale is tapping into the cultural and social values of Hispanic American parents and their children, then elevated Lie scores could be viewed as a reflection of a system of cultural norms and values and not as an indicator of poor accuracy and/or defensiveness on the part of these families.

Also examined was the relation between RCMAS Lie and Total Anxiety scores in different subgroups (i.e., boys, girls, older, younger, European American, and Hispanic American) of children. Although previous research using community samples (e.g., Dadds et al., 1998; Reynolds & Richmond, 1985) have found no significant relation between the two scales, the one clinic study that we know of that examined the relation between RCMAS Lie and Total Anxiety scale scores (i.e., Joiner et al., 1996b) found a significant negative correlation in an inpatient sample. Interestingly, in the present sample of children referred to an outpatient childhood anxiety disorders specialty clinic, a significant negative correlation of similar magnitude was found for the European American group[2] and for the younger children. These findings, along with Joiner et al. (1996b) suggest that Lie scores may indeed be indicators of defensiveness for some groups of children. Relatedly, we found that for European American children and younger children only, RCMAS Lie scores were predictive of the children's anxiety levels beyond parents' ratings of their children's anxiety using the RCMAS-P.

Another way that the utility of the Lie scale was examined was by determining whether its scores were significantly different among children with various anxiety disorders (specific phobias, overanxious and/or generalized anxiety disorder, separation anxiety disorder, and social phobia). Although we might expect that children with social anxiety-based disorders (i.e., overanxious and/or generalized anxiety disorder and social phobia) would have higher Lie scale scores than children with specific phobias and separation anxiety disorder, this was not the case. RCMAS Lie scale scores were not significantly different among any of the anxiety disorders examined here. A similar failure to find between-

[2] The majority of Joiner et al. (1996b) participants was European American (60.4%).

group differences has been noted when using the RCMAS Total Anxiety scores (Perrin & Last, 1992). These findings taken together highlight the need for either improving this aspect of the RCMAS and/or for developing other measures (e.g., the MASC and the SCARED) for finding between-group differences.

Moreover, it may be the case that not finding between-group differences is due to the high rates of comorbidity among the internalizing disorders in childhood (Angold et al., 1999). This issue also was explored in terms of whether Lie scores were significantly different among comorbid patterns; namely, comorbid anxiety disorders, comorbid anxiety + disruptive disorders, and comorbid anxiety + depressive disorders. Interestingly, Lie scores were found useful for distinguishing among comorbid patterns rather than among specific disorders. That is, RCMAS-P Lie scores were significantly higher for boys in the comorbid anxiety disorders group as compared to boys in the comorbid anxiety + disruptive group. Similarly, RCMAS Lie scores were significantly higher for girls in the comorbid anxiety disorders group as compared to girls in the comorbid anxiety + disruptive disorders group. This finding is not surprising because the items in the scale reflect favorable behavior, thus children (and their parents) who present with disruptive disorders are less likely to endorse the Lie scale items. The importance of this finding, however, rests on the possibility that the Lie scale may be useful across various dimensions, one of them being the ability to differentiate general categories of behaviors as classified by the different comorbid groups herein examined. However, it should be noted that our interpretation is premature given the exploratory nature of this study. It is therefore important that future research be conducted to further examine the robustness of this finding and to examine whether this explanation is a possibility.

The present investigation is limited, however, by several methodological issues that should be noted. First, our findings can only be generalized to clinic samples of anxious children. Further investigation of these issues with other clinical samples (e.g., children referred for externalizing behavior problems) awaits later study. Second, although RCMAS Lie scores were examined among European American children and Hispanic American children, we did not have a comparable group of African American children and their parents available for testing. Thus, future studies should examine the Lie scores of clinic-referred African American children, as well as other ethnic/racial groups. Third, because the present study mainly examined Lie scale scores in relation to the children's anxiety levels, it would be of interest for future research to examine RCMAS Lie scale scores in relation to other criteria, such as sibling and peer ratings of the children's psychosocial functioning.

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