

## A Preliminary Study of the Emotion Understanding of Youths Referred for Treatment of Anxiety Disorders

**Michael A. Southam-Gerow**

*Department of Psychology, University of California–Los Angeles*

**Philip C. Kendall**

*Department of Psychology, Temple University*

*Examined the emotion understanding of children and adolescents referred for treatment of Diagnostic and Statistical Manual of Mental Disorders (4th ed. [DSM–IV]; American Psychiatric Association, 1994) anxiety disorders (separation anxiety disorder, generalized anxiety disorder, or social phobia). Referred youths (n = 17) and nonreferred youths (n = 21) and their parents participated by completing self-report and parent-report questionnaires and structured diagnostic interviews. We interviewed all youths by using an emotion understanding interview. Referred youths demonstrated poorer understanding of hiding emotions and changing emotions compared with nonreferred youth. The 2 groups were not significantly different regarding their understanding of emotion cues and multiple emotions, however. No statistically significant relation emerged between general intelligence and emotion understanding. Future research directions are discussed.*

Anxiety disorders represent one of the most common psychological problems that children and adolescents experience (e.g., Anderson, 1994). Recent efforts have been made to identify cognitive (e.g., Chorpita, Albano, & Barlow, 1996; Silverman & Weems, 1999; Vasey, Daleiden, Williams, & Brown, 1995) and family factors (e.g., for review, see Ginsburg, Silverman, & Kurtines, 1995) associated with the development of anxiety disorders in youth. The focus on cognitive and family factors has not been matched by work examining dysregulation in youths' emotional development that may be related to the etiology of anxiety disorders. However, a recent surge of interest in emotion fueled by developmental psychopathology researchers (e.g., Cicchetti & Cohen, 1995) suggests that the time is ripe for extending paradigms from the emotional develop-

ment literature to research on anxiety disorders. The study of emotion understanding represents one possible avenue. *Emotion understanding* refers to people's knowledge about their feelings (e.g., meta-emotive understanding; Thompson, 1990). In this article, we focus on four related but conceptually distinct areas of emotion understanding: knowledge about (a) cues for feelings, (b) simultaneous emotions, (c) hiding emotions (e.g., knowing about display rules), and (d) emotion regulation (i.e., coping with emotions).

The development of emotion understanding fosters many adaptive processes (e.g., social functioning; Hubbard & Coie, 1994), and thus, it is plausible that delays in the development of emotion understanding may be an important factor in the development of psychopathology (e.g., as a mediator or moderator). Many childhood disorders involve emotion dysregulation (see Garber & Dodge, 1991). Youths' understanding of the physiological manifestations of their feelings, their beliefs about their ability to cope, and their knowledge of emotion regulation strategies may have important implications for the development of disorder—and may imply possible means for treatment (e.g., coping skills training, emotional education). The relation between emotion understanding and psychopathology may be particularly relevant to anxiety disorders because patterns of emotion dysregulation (e.g., difficulty controlling worry, excessive or unreasonable fear in social situations or when separated from attachment figure) are characteristic features of anxiety disorder diagnoses per the *Diagnostic and Statistical Manual*

---

This study was supported in part by National Institute of Mental Health Grants RO1–MH44042 and RO1–MH57347. An earlier version of this manuscript served as a part of the Michael A. Southam-Gerow's doctoral dissertation.

We thank our colleagues at the CAADC, in particular, Abbe Marrs, Amy Krain, Brian Chu, and Jennifer Hogan. We also appreciate John Lestino, Harlene Galen, Dennis Corbett, Scott Streckenbein, Walter Dold, and the staff at the Edgewater Park (NJ) School District. We also thank Jay Efran, Rob Fauber, Rick Heimberg, Bill Overton, and Larry Steinberg for their instructive comments on an earlier draft of this manuscript. Most importantly, we express our appreciation to the families who agreed to participate in the study.

Requests for reprints should be sent to Michael A. Southam-Gerow, Department of Psychology, University of California–Los Angeles, Franz Hall, Los Angeles, CA 90095–1563. E-mail: msg@psych.ucla.edu

of *Mental Disorders* (4th ed. [*DSM-IV*]; American Psychiatric Association, 1994).

Overviews of the extant literature on the development of children's emotion understanding have been published elsewhere (e.g., Harris, 1993). Briefly, the developmental trend of emotion understanding proceeds from basic understanding like recognition of facial expressions (see Izard & Harris, 1995) and the use of emotion labels (see Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986) to more advanced understanding like formulating causal "theories" about emotions (e.g., Harris & Saarni, 1989). The development of emotion understanding proceeds more slowly for more "complex" emotions like pride, shame, or embarrassment (e.g., Harris, 1993). Research specifically on the development of children's understanding of anxiety has not been conducted. Another milestone is children's understanding that they can (a) experience more than one emotion simultaneously (e.g., Harter & Buddin, 1987), (b) strategically control their emotion displays (i.e., display rules; e.g., Saarni, 1979), and (c) change their emotional reactions (e.g., Band & Weisz, 1988).

Emotion understanding research with psychopathological samples (e.g., youths diagnosed with a *DSM-IV* disorder, clinically referred youth) has been relatively meager. In work with at-risk samples (e.g., abused youths, youths with clinically depressed mothers), emotion understanding deficits include (a) poor recognition of facial expressions, (b) limited understanding of the causes of emotion, and (c) delayed understanding of emotion regulation (e.g., Camras et al., 1988; Cook, Greenberg, & Kusche, 1994; Garber, Brafladt, & Weiss, 1995). In clinically referred or diagnosed samples, findings from several researchers suggest deficits in similar areas (e.g., Casey, 1996; Meerum-Terwogt, Schene, & Koops, 1990; Taylor & Harris, 1984), although with the exception of Casey's (1996) work, less than optimal methods (e.g., lack of a standardized way to assess the nature and degree of psychopathology) have characterized this work. Moreover, the research has not included anxiety-disordered youth, instead focusing on conduct-disordered youths or more heterogeneous "psychiatric" samples. Additional research is needed to bolster the preliminary conclusions that disordered youths evidence deficits in emotion understanding.

One final note concerns the relation between general intelligence and emotion understanding, which, despite its theoretical and practical importance, has received limited research focus. Although current researchers and theoreticians argue that emotion understanding and intelligence are orthogonal (e.g., Salovey & Sluyter, 1997), it is conceivable that emotion understanding may be related to general intelligence or cognitive development especially because measures of emotion understanding typically rely on a child's verbal report

(e.g., Carroll & Steward, 1984). Unfortunately, most research has not concurrently measured IQ or level of cognitive development and emotion understanding (for exceptions, see Carroll & Steward, 1984; Cook et al., 1994), therefore little is known about the relation between the two constructs. The findings from the few studies that have examined the relation suggest that cognitive development and IQ are related to some (though not all; see Cook et al., 1994) forms of emotional understanding. Cook et al., for example, found that relations between emotion understanding and level of behavior problems were eliminated when IQ was used as a covariate, but only when the lowest functioning youths (i.e.,  $IQ < 85$ ) were included. When these youths were excluded, relations between emotion understanding and level of behavior problems remained significant for two of the three indexes measured. Characteristics of the sample (i.e., youths with behavior problems, age range limited to 6- to 8-year-olds) limit the generalizability of findings and suggest that the relation between IQ and emotion understanding remains unclear.

In this preliminary investigation, we compared youths referred for treatment at an anxiety disorders clinic (referred-anxious [RA]) to nonreferred (NR) youths on a measure of emotion understanding, the Kusche Affective Interview-Revised (KAI-R; Kusche, Beilke, & Greenberg, 1988). We hypothesized that RA youths would demonstrate deficits in their emotion understanding compared with NR youth. We tested this hypothesis by using both categorical measures (i.e., diagnoses from a structured interview) and continuous measures (e.g., self- and parent-report measures of anxiety) of psychopathology. Additionally, we examined the effect of intelligence on emotion understanding. We hypothesized that intelligence would correlate moderately with emotion understanding (and therefore require statistical control in the data analyses; cf. Cook et al., 1994) but that the effect would not alter the relation between emotion understanding and psychopathology. Overall, the study represented an initial, preliminary step to examine the emotion understanding of youths with anxiety disorders.

## Method

### Participants

Youths with anxiety disorders (RA) were clinical patients at the Child and Adolescent Anxiety Disorders Clinic at Temple University ( $n = 17$  participants, 8 girls). Consent and assent to participate in the research project were obtained at the time of an initial clinic interview. The mean age of participants was 11.5 years ( $SD = 2.3$ ; range = 7.5 to 14 years). All RA participants received a primary diagnosis of one of the following

**Table 1.** Demographic Variables for the RA and NR Groups

Variable	RA <sup>a</sup>		NR <sup>b</sup>		$\chi^2$	df
	n	%	n	%		
Sex					0.31	1
Female	8	47	8	38		
Male	9	53	13	62		
Family Income					5.78	3
Below \$20,000	2	12	3	14		
\$20,000–\$50,000	6	35	6	29		
\$50,000–\$80,000	4	24	11	52		
Above \$80,000	5	29	1	5		
Race					0.08	1
Caucasian	14	82	18	86		
Non-Caucasian	3	18	3	14		
Family Configuration					1.60	1
Two-Parent	15	88	15	71		
Nondual Parent	2	12	6	29		

Note: RA = referred for anxiety treatment; NR = nonreferred.

<sup>a</sup>n = 17. <sup>b</sup>n = 21.

DSM-IV (American Psychiatric Association, 1994) Axis I anxiety disorders: generalized anxiety disorder, separation anxiety disorder, and social phobia, as determined by the Anxiety Disorders Interview Schedule for Children (ADIS-IV-C/P; Silverman & Albano, 1996). The procedure for establishing interrater reliability for the diagnostic interview is described later. Regarding primary diagnoses in the RA group, 10 participants (58.8%) met criteria for generalized anxiety disorder, 5 (29.4%) for separation anxiety disorder, and 2 (11.8%) for social phobia. Children with comorbid conditions (e.g., dysthymia, attention deficit hyperactivity disorder) were included. Comorbidity was high in the RA sample; only 1 youth had a single diagnosis, whereas 10 had two diagnoses, 4 had three diagnoses, 1 had four diagnoses, and 1 had five diagnoses.<sup>1</sup> Demographic characteristics of this sample are presented in Table 1.

We recruited the NR control participants (n = 21; 8 girls) from a local school by using an active consent procedure. Specifically, a letter describing the study was sent home (with the youths) to parents of all students in an elementary and middle school (Grades 3 through 8; 500 total students). To participate, parents were required to call the researchers to arrange an in-person interview. Only those students whose parents contacted the researchers participated in the study. Fifteen dollars and prizes for participating children were offered as incentives. Participation rate was disappointingly low; possible reasons for this are discussed subsequently. NR participants completed the same battery of measures as the RA participants. The mean age for these children was 12 years (SD = 2.1; range = 8 to 15.3 years). Demographic characteristics of this sample are also presented in Table 1.

<sup>1</sup>Details on the patterns of comorbidity are available from Michael A. Southam-Gerow.

## Measures

Measures included (a) youth self-report measures, (b) parent-report measures, (c) a structured diagnostic interview, (d) a structured emotion understanding interview, and (e) a cognitive functioning measure.

### Youth Self-Report Measures

**Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985).** A measure of the youth's chronic anxiety (trait), the scale consists of 37 items—including a 9-item Lie scale—to which children respond "yes" or "no." Several studies have demonstrated strong psychometric properties for the RCMAS, and normative data have been reported (Reynolds & Richmond, 1985). The RCMAS was included both to check the validity of group membership (i.e., RA vs. NR) and as a secondary way to examine whether child anxiety was related to level of emotion understanding.

**Kusche Affective Interview-Revised (KAI-R; Kusche et al., 1988).** The interview was developed as an extension of earlier work (e.g., Carroll & Steward, 1984; Donaldson & Westerman, 1986; Harter & Buddin, 1987) to assess children's experiential and metacognitive understanding of emotion. The measure was originally developed as part of a longitudinal study examining the emotional development of elementary school children (first assessment point: Grades 1 through 3; Greenberg, Kusche, Cook, & Quamma, 1995). The KAI-R consists of a series of open-ended questions; responses are recorded verbatim and subsequently coded. For example, a youth is asked, "How do

you know when you are feeling sad?" and "Can you change your feelings?" Youths were prompted to provide more than one response to a given question (e.g., "Is there another way you can tell you are feeling sad?").

Data from four of the seven sections of the KAI-R were used for this study. The first section assessed children's knowledge about the cues for emotions (e.g., situational cues, facial cues, internal cues). Children were asked, "How do you know when you are feeling...?" for 10 emotions (e.g., happy, sad, mad, scared, love, proud, guilty, jealous, nervous, lonely); they were prompted to respond to each question with as many cues as they could think of. Overall summary scores for the developmental level of the responses for each emotion were assigned ranging from 0 to 3, with external cues (e.g., bodily cues, facial expressions, situations) rated lower and internal cues (i.e., cognitive cues) rated higher. Scores for each of the 10 emotions were summed to create a composite index, ranging from 0 to 30. The second section assessed children's understanding of multiple emotion combinations (i.e., sad and mad; happy and sad; calm and nervous; love and angry; e.g., "Can you feel sad and mad at the same time?"); we coded responses for overall understanding, ranging from 0 to 6, based on a coding manual. Higher scores indicated a child's appreciation of the mutual influence that simultaneous emotions have on one another. The four developmental level scores (one for each of the four multiple emotion combinations) were summed to form a composite index (range 0 to 24). The third section assessed children's knowledge of hiding their feelings (i.e., "How do you hide your feelings from others? How do others hide their feelings from you?"); we coded responses for the youth's level of understanding according to a system devised by Carroll and Steward (1984). Scores ranged from 0 to 3; higher scores reflected more internal strategies for hiding emotion, with the highest score (i.e., 3) assigned when children stated that they could feel one way inside and show another feeling on the outside ("When someone asks if you are all right, [you] say 'Yeah' but you know inside you are hurting."). Two scores (one for level of hiding one's own feelings and one for others hiding their feelings) were summed to form a composite index (range 0 to 6). In the final section, children's knowledge about changing their emotions was assessed (e.g., "Can you change your feelings? How?"); we assigned separate codes by using Carroll and Steward's and Donaldson and Westerman's (1986) systems. Scores in Carroll and Steward's system reflect the extent to which a child recognizes the importance of self-reflective strategies in changing emotion; the scores range from 0 to 3. For the Donaldson and Westerman system, scores reflect the degree to which a child believes that emotion is determined by inner processes rather than external forces; scores range

from 0 to 3. The two scores were summed to form a composite index<sup>2</sup> (range 0 to 6).

Coding criteria are detailed in a manual (Beilke, Kusche, & Greenberg, 1988). Interrater reliability for the coding system was established in two separate studies (Cook et al., 1994; Greenberg et al., 1995); reliability coefficients have ranged from .80 to .95.

For this study, we established reliability for coding of the KAI-R by having protocols coded by two independent raters; an interrater consistency percentage was computed by dividing total agreements and disagreements by agreements (see Cook et al., 1994; Greenberg et al., 1995). A training period with practice cases (nonparticipants) was used to establish reliability; coding decisions for these practice cases were discussed, with Michael A. Southam-Gerow as supervisor. Reliability percentages for all individual codes and summary scores were all above .80 after the training phase, except for two of the summary scores for which reliability coefficients were .67 (emotion change index) and .75 (multiple emotions index). A random sample (33%) of protocols of participants was used to recheck reliability after all were coded, yielding adequate reliability coefficients (i.e., >.80; range .85 to 1.00) for all code categories with an average of .91.

**Wechsler Intelligence Scale for Children—Third Edition (WISC—III; Wechsler, 1991).** The WISC—III is a widely used instrument for assessing children's cognitive functioning. For purposes of the study, two of the subtests (i.e., Vocabulary, Block Design) were administered and used as an estimate of general intelligence (*g*). The reliability and validity coefficients for the dyad short-form of Block Design and Vocabulary are .91 and .86 (Sattler, 1992); the two have the highest *g* loadings of the Performance and Verbal scales (Sattler, 1992). Psychometric data for the WISC—III and all of its subtests are available (Wechsler, 1991).

### Parent-Report Measures

**Anxiety Disorders Interview Schedule for Children (ADIS—IV—C/P; Silverman & Albano, 1996).** The ADIS—IV—C/P is a structured diagnostic interview used to determine *DSM—IV* diagnoses in children and adolescents. Satisfactory interrater and retest reliability data have been reported for the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev. [*DSM—III—R*]; American Psychiatric Association, 1987) version of the ADIS—C/P III-R (e.g., Silverman & Rabian, 1995). The parent-report version only was used in the study because time constraints for the NR group precluded administration of the child version of the interview.

<sup>2</sup>The two scores are conceptually related and were correlated .86 ( $p < .01$ ).

To establish reliability for the ADIS-IV-C/P for this study, interviewers independently rated tapes previously rated by reliable diagnostic interviewers in the clinic. Cohen's kappa coefficient (Cohen, 1960) was equal to or greater than .80 for all diagnostic categories. For the three anxiety disorders that were the focus of the study—generalized anxiety disorder, separation anxiety disorder, and social phobia—the kappas were .95, .82, and 1.00, respectively.

**Child Behavior Checklist (CBCL; Achenbach, 1991).** The CBCL is a widely used 118-item scale that assesses an array of behavioral problems. Achenbach (1991) reported reliability, stability, and validity evidence along with normative data. The CBCL was included both to check the validity of group membership (RA vs. NR) and as a secondary way to examine whether child anxiety was related to level of emotion understanding. The broad-band internalizing scale and the narrow-band anxiety-depression scale were used for this study.

**State-Trait Anxiety Inventory for Children—Modification of Trait Version for Parents (STAIC-P-T).** Strauss (1987) modified the trait version of the STAIC (Spielberger, 1973) to be used as a parent rating of the youth's trait anxiety. Reliability and concurrent validity are fair to good (Southam-Gerow, Flannery-Schroeder, & Kendall, 2000). Similar to the CBCL, the STAIC-P-T was included both to check the validity of group membership (e.g., RA vs. NR) and as a secondary way to examine whether anxiety was related to level of emotion understanding.

### Procedure

Doctoral students in clinical psychology at Temple University served as interviewers, and an undergraduate honors psychology student served as a research assistant. For the RA group, children and parents completed a pretreatment battery of assessments (e.g., ADIS-IV-C/P, self- and parent-report measures) including the WISC-III subtests and the emotion understanding interview in one session.<sup>3</sup> For the NR group, children and parents completed the battery of measures and were interviewed individually (parents with the

ADIS-IV-C/P and youths with the KAI-R and WISC-III) at a school administration building. For the youth, order of the administration of the WISC-III and KAI-R was alternated randomly. All NR participants were compensated with \$15 and a small prize (e.g., pencils, snack, notebook).

## Results

### Preliminary Analyses

Preliminarily, we used the Bonferroni procedure to control for Type I errors within each of the several categories of measures used in the study: (a) parent report of youth psychopathology (three tests;  $\alpha = .017$ ); (b) youth report of youth psychopathology (one test;  $\alpha = .05$ ); and (c) WISC-III subtests (two tests;  $\alpha = .025$ ). In other words, we divided the initial alpha level of .05 by the number of tests conducted within the several categories we investigated.

A set of preliminary *t* tests and chi-square tests were performed to determine if the RA and NR participants differed across relevant demographic variables (see Table 1): sex, family income, ethnicity, and family composition (e.g., single parent). Nonsignificant differences were found for all of these preliminary tests (all *ps* > .15).

Means and standard deviations for the children's age, their self-report of anxiety (i.e., RCMAS), and their parents's report of youth distress (i.e., CBCL, STAIC-P-T) are presented in Table 2. The RA group's scores were significantly higher (i.e., more distress) than the NR group's scores on all measures of child symptomatology. These results support the validity of group membership, with the RA group evidencing higher scores on the parent- and youth-report measures of internalizing problems. The *t* test for age indicated nonsignificant differences between the groups.

Previous research has suggested that general intelligence and emotion understanding may be related (e.g., Carroll & Steward, 1984; Cook et al., 1994). To determine if the RA and NR groups differed on their WISC-III scores, we performed *t* tests, using a Bonferroni correction to control for Type I errors (*p* set at .025). Results indicated nonsignificant group differences on both WISC-III subtest scores: Vocabulary and Block Design. Means and standard deviations for the WISC-III subtest scores are presented in Table 2. To determine if IQ and emotion understanding were related in this study, we examined correlation coefficients for the KAI-R indexes and WISC-III scores (i.e., Vocabulary and Block Design), finding that none was statistically significant (using a Bonferroni correction with *p* set at .025): emotion cues = .18 with Vocabulary and -.13 with Block Design; multiple emotions = .19 with Vocabulary and -.04 with Block Design; hiding emotions

<sup>3</sup>All youths in the RA group were participants in treatment intervention studies (Flannery-Schroeder & Kendall, in press; Kendall et al., 1997). Although effort was made to collect the KAI-R and the WISC-III protocols at the time of the pretreatment evaluation, sometimes the length of the battery precluded such an arrangement (e.g., the child became tired after completing other instruments, the family had time constraints). Because of the possibility that treatment would impact the emotion understanding scores, all KAI-R results were collected before the second session. However, because WISC-III scores were not likely to be affected by treatment, they were on occasion collected during treatment.

**Table 2.** Means and Standard Deviations of Measures for the RA and NR Groups

Measure	RA		NR		<i>t</i>	<i>df</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Demographic Variable						
Youth Age (In Years)	11.5	2.3	12.0	2.1	-1.67	36
Youth-Report Measures ( <i>t</i> Scores Unless Indicated)						
RCMAS	53.9	10.2	43.5	8.0	3.47*	36
Parent-Report Measures ( <i>t</i> Scores Unless Indicated)						
CBCL-I	67.3	6.9	51.5	7.8	6.55**	36
CBCL-AD	67.6	8.1	53.1	4.1	7.17**	36
STAIC-P-T	52.0	8.7	36.7	5.5	6.63**	36
WISC-III Subtests (Standard Scores; <i>M</i> = 10)						
Block Design	10.6	3.8	9.4	3.7	1.03	36
Vocabulary	11.4	3.9	10.4	2.4	0.94	36

Note: RA = referred for anxiety treatment; NR = nonreferred; RCMAS-A = Revised Children's Manifest Anxiety Scale; CBCL-I = Child Behavior Checklist-Internalizing Scale; CBCL-AD = Child Behavior Checklist-Anxiety/Depression Scale; STAIC-P-T = State-Trait Anxiety Inventory for Children-Parent Report, Trait Version; WISC-III = Wechsler Intelligence Scale for Children-Third Edition.

\* $p < .01$ . \*\* $p < .001$ .

**Table 3.** Means and Standard Deviations of Emotion Understanding Indexes

Measure	RA		NR		<i>t</i>	<i>df</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
KAI-R Indexes (Raw Scores)						
Emotion Cues	20.2	3.9	20.4	6.2	-0.10	36
Multiple Emotions	10.6	4.7	12.2	5.0	-0.98	36
Hiding Emotions	3.4	1.4	4.6	1.0	-2.79*	29 <sup>a</sup>
Changing Emotions	2.6	1.7	4.5	1.6	-3.52*	36

Note: RA = referred for anxiety treatment; NR = nonreferred; KAI-R = Kusche Affective Interview-Revised.

<sup>a</sup>The difference in degrees of freedom for the hiding emotions index was related to uncodeable and missing data for the variable.

\* $p < .01$ .

= -.13 with Vocabulary and -.10 with Block Design; changing emotions = -.19 with Vocabulary and -.13 with Block Design. Inasmuch as WISC-III scores were not related to emotion understanding (i.e., KAI-R indexes), IQ was not included as a covariate as originally planned.

### Primary Analyses

Four *t* tests were used to test group differences on the following KAI-R composite indexes: (a) knowledge of cues of emotions (self and other—hereafter referred to as *emotion cues*), (b) understanding of multiple emotions (multiple emotions), (c) understanding of hiding/masking emotion (hiding emotions), and (d) changing emotions (changing emotions). Means, standard deviations, and *t*-test results are presented in Table 3.

Results of the *t* tests indicated significant group differences on the indexes associated with children's understanding of hiding emotions (Cohen's  $d = 0.97$ ) and children's understanding of changing emotions (Cohen's  $d = 1.12$ ). Nonsignificant group differences emerged for the children's developmental level of mul-

iple emotions (Cohen's  $d = 0.31$ ) and for the emotion cues scores (Cohen's  $d = 0.03$ ).<sup>4</sup>

As a secondary level of analysis, we conducted correlational analyses to determine relations among the child- and parent-report measures and the four KAI-R indexes. Table 4 displays the correlation matrix. Using a Bonferroni correction to control for the number of tests conducted, we set the alpha level at .013 (i.e., four tests for each index:  $.05/4 = .013$ ). The CBCL internalizing scale correlated significantly with the hiding emotions index but did not correlate with the other three KAI-R indexes (i.e., emotion cues, multiple emotions, changing emotions). The CBCL Anxiety/Depression scale correlated significantly with the changing emotions index but not the other three indexes. RCMAS and STAIC-P-T scores were not correlated with any of the KAI-R indexes.

<sup>4</sup>Analyses conducted to examine the impact of the high rates of comorbidity in the RA sample were consistent with the primary analyses. Correlation analyses indicated significant relations between the number of diagnoses and two of the emotion understanding indexes: hiding emotions ( $r = -.43$ ) and changing emotions ( $r = -.39$ ). For the other two, correlations were nonsignificant.

## Discussion

These findings represent a preliminary look at the emotion understanding of youths with anxiety disorders. Results from this preliminary study indicate that youths referred for treatment of anxiety disorders have a less developed understanding of hiding and changing their emotions compared with nonreferred youth; the effect sizes for these differences were both large. However, RA and NR youths did not differ in terms of their understanding of emotion cues and multiple emotions. Moreover, general intelligence did not have a significant relation with these indexes of emotion understanding. Overall, results support the potential utility of the assessment of emotion understanding in work with youths referred for treatment with anxiety disorders.

Youths in the RA group evidenced a poorer understanding of two of the four measured components of emotion understanding: hiding emotions and changing emotions. The two domains of understanding—hiding and changing emotion—are both related to the modulation or regulation of emotion. Thus, compared with NR children, RA children have a poorer understanding of emotion regulation and, in their descriptions of how they might change their emotions, present fewer and/or less mature methods, a finding consistent with previous research on emotion understanding (e.g., Garber et al., 1995; Taylor & Harris, 1984). Research with adults generally has supported the notion that high trait anxiety and the presence of anxiety disorders are associated with low mood-regulation expectancy, feelings of helplessness in coping with one's feelings, negative attributional style, and generally negative affectivity (e.g., Catanzaro, 1993; Jolly, Dyck, Kramer, & Wherry, 1994). Research with children, although less plentiful, has yielded similar findings (e.g., Bell-Dolan & Wessler, 1994).

The results indicate nonsignificant differences between RA and NR children regarding their understanding of emotion cues and multiple emotions, a finding

that is somewhat inconsistent with previous research. Notwithstanding Meerum-Terwogt et al.'s (1990) finding that "disordered" children exhibited equivalent understanding of multiple emotions compared with nondisordered children, most research has demonstrated a "lag" in emotion understanding for disordered and at-risk children (e.g., Cook et al., 1994; Meerum-Terwogt et al., 1990). There are a few possible explanations. First, this study focused on youths referred for treatment of anxiety disorders; no other study has examined this specific group, and thus the finding may be unique to it. The small sample and restricted age range provide another possible reason for the nonsignificant findings. Previous developmental research has suggested that for both indexes, children as young as 8 years of age may have grasped the concepts. Differences might be found if younger youths—in adequate numbers—were included in the sample (e.g., Cook et al., 1994).

The relation of general intelligence to emotion understanding was minimal. Although the limited sample size does not provide a conclusive test of this relation, these results underscore the relevance of an examination of emotion understanding apart from general intelligence. In addition, because the findings are not entirely consistent with past work (e.g., Carroll & Steward, 1984; Cook et al., 1994), future work could determine the specificity of the finding.

A literature on the relations among emotion regulation, coping, control, and anxiety disorders (and other internalizing disorders) is developing (e.g., Chorpita & Barlow, 1998), and this study provides preliminary supportive evidence on which future work can build. For example, an assessment of *whether* and *how* youths employ knowledge about emotion regulation would be informative (i.e., in an adaptive manner? see Prins, Groot, & Hanewald, 1994). For example, including indexes of actual emotion regulation behavior (e.g., via observation) would prove highly informative. Additionally, future research could examine the impact of familial influences (e.g., maternal expectations, parental psychopathology, parental styles) and contextual influences on the relations among emotion understanding, emotion regulation, and the development of psychopathology. Finally, inclusion of measures of cognitive variables (e.g., attributional style), child temperament, and other related factors would provide a comprehensive understanding of the development of anxiety disorders in youth.

Although this study has several strengths (e.g., use of a broad measure of emotion understanding, a target psychopathological group, assessment of intelligence), there are caveats to consider. For example, although this study examined children ages 7 to 15, a larger sample and an expanded age range (especially including children ages 4 and up) would permit a broader examination of the developmental picture of emotion under-

**Table 4.** Correlation Matrix of KAI-R Indexes and Participant Measures

	Cue	Mult.	Hide	Change
CBCL-I	-.06	-.14	-.47*	-.36
CBCL-AD	-.05	-.16	-.29	-.43*
STAIC-P-T	.06	.15	-.35	-.28
RCMAS	-.02	.11	-.14	-.15

*Note:* KAI-R = Kusche Affective Interview-Revised; Cue = KAI-R Emotion Cues Index; Mult. = KAI-R Multiple Emotions Index; Hide = KAI-R Hide Emotion Index; Change = KAI-R Change Emotion Index; CBCL-I = Child Behavior Checklist Internalizing Scale; CBCL-AD = Child Behavior Checklist Anxiety/Depression Scale; STAIC-P-T = State-Trait Anxiety Inventory for Children-Parent report, Trait Version; RCMAS = Revised Children's Manifest Anxiety Scale.

\* $p < .013$ .

standing and its relation to anxiety disorders. Because the KAI-R originally was devised to study younger children, some of the sections may not be as sensitive to some emotion understanding differences in older children. However, the sensitivity of the instrument to emotion understanding differences for the age range in this study appears adequate in the case of hiding and changing emotions. Another issue concerns the study's sole focus on youths referred for treatment of anxiety disorders (i.e., one psychopathological group). As such, the investigation does not permit conclusions about the specificity of the findings to anxiety disorders or the generalizability of the findings to other disorders. Future studies could include children with other identified problems (e.g., depression, aggression, attention deficit hyperactivity disorder).

Another limitation of the study is our exclusive use of parent-report to establish youth diagnosis on the ADIS-IV-C/P. However, the parent ADIS-IV-C/P was supplemented by the youth-report and other parent-report measures of psychopathology, and differences between the two groups on these measures supported the ADIS-IV-C/P divisions (e.g., RCMAS and CBCL scores were significantly higher for the RA group compared with the NR group). Nevertheless, because many studies report low concordance rates of youth-parent endorsement of internalizing problems (e.g., Frick, Silverthorn, & Evans, 1994; Stanger & Lewis, 1993), an assessment of youth-reported diagnosis would have been informative.

Because we used a clinically referred sample, comorbidity rates were high. Although different results may be uncovered in samples of children with only anxiety disorders, current evidence suggests that a sample of youths with single anxiety disorders may be the exception and not the norm, especially in clinically referred populations (e.g., Last, Perrin, Hersen, & Kazdin, 1992). Finally, there is reason for concern about the representativeness of the NR group because of the low rate of participation in the school from which we recruited our sample. Although we cannot be certain why so few families chose to participate in the study, we suspect several factors played a large role (e.g., requirement that parents directly contact researchers, high level of parental involvement required, relatively low compensation). Future research with larger, more representative nonreferred samples is needed.

## References

- Achenbach, T. M. (1991). *Manual for the child behavior checklists/4-18 and 1991 profile*. Burlington: University of Vermont.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Anderson, J. C. (1994). Epidemiology. In T. H. Ollendick, N. J. King, & W. Yule (Eds.), *International handbook of phobic and anxiety disorders in children and adolescents* (pp. 293-315). New York: Plenum Press.
- Band, E. B., & Weisz, J. R. (1988). How to feel better when it feels bad: Children's perspectives on coping with everyday stress. *Developmental Psychology, 24*, 247-253.
- Beilke, R. L., Kusche, C. A., & Greenberg, M. T. (1988). *Coding manual for the Kusche Affective Interview-Revised*. Unpublished manuscript, University of Washington, Seattle.
- Bell-Dolan, D., & Wessler, A. E. (1994). Attributional style of anxious children: Extensions from cognitive theory and research on adult anxiety. *Journal of Anxiety Disorders, 8*, 79-96.
- Bretherton, I., Fritz, J., Zahn-Waxler, C., & Ridgeway, D. (1986). Learning to talk about emotions: A functionalist perspective. *Child Development, 57*, 529-548.
- Camras, L. A., Ribordy, S., Hill, J., Martino, S., Spaccarelli, S., & Stefani, R. (1988). Recognition and posing of emotional expressions by abused children and their mothers. *Developmental Psychology, 24*, 776-781.
- Carroll, J. J., & Steward, M. S. (1984). The role of cognitive development in children's understandings of their own feelings. *Developmental Psychology, 55*, 1486-1492.
- Casey, R. J. (1996). Emotional competence in children with externalizing and internalizing disorders. In M. Lewis & M. W. Sullivan (Eds.), *Emotional development in atypical children* (pp. 161-183). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Catanzaro, S. J. (1993). Mood regulation expectancies, anxiety sensitivity, and emotional distress. *Journal of Abnormal Psychology, 102*, 327-330.
- Chorpita, B. F., Albano, A. M., & Barlow, D. H. (1996). Cognitive processing in children: Relation to anxiety and family influences. *Journal of Clinical Child Psychology, 25*, 170-176.
- Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*, 3-21.
- Cicchetti, D., & Cohen, D. J. (Eds.). *Developmental psychopathology: Vol. I. Theory and methods*. New York: Wiley.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*, 37-46.
- Cook, E. T., Greenberg, M. T., & Kusche, C. A. (1994). The relations between emotional understanding, intellectual functioning, and disruptive behavior problems in elementary-school-aged children. *Journal of Abnormal Child Psychology, 22*, 205-219.
- Donaldson, S. K., & Westerman, M. A. (1986). Development of children's understanding of ambivalence and causal theories of emotion. *Developmental Psychology, 22*, 655-662.
- Flannery-Schroeder, E. C., & Kendall, P. C. (in press). Group and individual cognitive behavioral treatments for youth with anxiety disorders: A randomized clinical trial. *Cognitive Therapy and Research*.
- Frick, P. J., Silverthorn, P., & Evans, C. (1994). Assessment of childhood anxiety using structured interviews: Patterns of agreement among informants and association with maternal anxiety. *Psychological Assessment, 6*, 372-379.
- Garber, J., Braafladt, N., & Weiss, B. (1995). Affect regulation in depressed and non-depressed children and young adolescents. *Development and Psychopathology, 7*, 93-116.
- Garber, J., & Dodge, K. A. (Eds.). (1991). *The development of emotion regulation and dysregulation*. New York: Cambridge University Press.
- Ginsburg, G. S., Silverman, W. K., & Kurtines, W. M. (1995). Family involvement in treating children with phobic and anxiety disorders: A look ahead. *Clinical Psychology Review, 15*, 457-473.

- Greenberg, M. T., Kusche, C. A., Cook, E. T., & Quamma, J. P. (1995). Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. *Development and Psychopathology*, 7, 117–136.
- Harris, P. L. (1993). Understanding emotion. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 237–246). New York: Guilford.
- Harris, P. L., & Saarni, C. (1989). Children's understanding of emotion: An introduction. In C. Saarni & P. L. Harris (Eds.), *Children's understanding of emotion* (pp. 3–24). New York: Cambridge University Press.
- Harter, S., & Buddin, B. J. (1987). Children's understanding of the simultaneity of two emotions: A five-stage developmental acquisition sequence. *Developmental Psychology*, 23, 388–399.
- Hubbard, J. A., & Coie, J. D. (1994). Emotional correlates of social competence in children's peer relationships. *Merrill-Palmer Quarterly*, 40, 1–20.
- Izard, C. E., & Harris, P. L. (1995). Emotional development and developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Vol. I. Theory and methods* (pp. 467–503). New York: Wiley.
- Jolly, J. B., Dyck, M. J., Kramer, T. A., & Wherry, J. N. (1994). Integration of positive and negative affectivity and cognitive content-specificity: Improved discrimination of anxious and depressive symptoms. *Journal of Abnormal Psychology*, 103, 544–552.
- Kendall, P. C., Flannery-Schroeder, E. C., Panichelli-Mindel, S. P., Southam-Gerow, M. A., Henin, A., & Warman, M. J. (1997). Treating anxiety disorders in youth: A second randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 65, 366–380.
- Kusche, C. A., Beilke, R. L., & Greenberg, M. T. (1988). *Kusche Affective Interview-Revised*. Unpublished manuscript, University of Washington, Seattle.
- Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1992). DSM-III-R anxiety disorders in children: Sociodemographic and clinical characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 1070–1076.
- Meerum-Terwogt, M. (1990). Disordered children's acknowledgment of multiple emotions. *Journal of General Psychology*, 117, 59–69.
- Meerum-Terwogt, M., Schene, J., & Koops, J. (1990). Concepts of emotion in institutionalized children. *Journal of Child Psychology and Psychiatry*, 31, 1131–1143.
- Prins, P. J. M., Groot, M. J. M., & Hanewald, G. J. F. P. (1994). Cognition in test-anxious children: The role of on-task and coping cognition reconsidered. *Journal of Consulting and Clinical Psychology*, 62, 404–409.
- Reynolds, C. R., & Richmond, B. O. (1985). *Revised Children's Manifest Anxiety Scale (RCMAS): Manual*. Los Angeles: Western Psychological Services.
- Saarni, C. (1979). Children's understanding of display rules for expressive behavior. *Developmental Psychology*, 15, 424–429.
- Salovey, P., & Sluyter, D. J. (Eds.). (1997). *Emotional development and emotional intelligence: Educational implications*. New York: Basic Books.
- Sattler, J. M. (1992). *Assessment of children* (3rd ed.). San Diego, CA: Author.
- Silverman, W. K., & Albano, A. M. (1996). *Anxiety disorders interview schedule for DSM-IV: Child version*. San Antonio, TX: Psychological Corporation.
- Silverman, W. K., & Rabian, B. (1995). Test-retest reliability of the DSM-III-R childhood anxiety disorders symptoms using the Anxiety Disorders Interview Schedule for Children. *Journal of Anxiety Disorders*, 9, 139–150.
- Silverman, W. K., & Weems, C. F. (1999). Anxiety sensitivity in children. In S. Taylor (Ed.), *Anxiety sensitivity: Theory, research, and treatment of the fear of anxiety* (pp. 239–268). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Southam-Gerow, M. A., Flannery-Schroeder, E. C., & Kendall, P. C. (2000). *Psychometric evaluation of the parent-report version of the STAIC*. Unpublished manuscript.
- Spielberger, C. (1973). *Manual for the State-Trait Anxiety Inventory for Children*. Palo Alto, CA: Consulting Psychologists Press.
- Stanger, C., & Lewis, M. (1993). Agreement among parents, teachers, and children on internalizing and externalizing behavior problems. *Journal of Clinical Child Psychology*, 22, 107–115.
- Strauss, C. (1987). *Modification of trait portion of State-Trait Anxiety Inventory for Children-parent form*. Unpublished manuscript, University of Florida, Gainesville.
- Taylor, D. A., & Harris, P. L. (1984). Knowledge of strategies for the expression of emotion among normal and maladjusted boys: A research note. *Journal of Child Psychology and Psychiatry*, 24, 141–145.
- Thompson, R. A. (1990). Emotion and self-regulation. In R. A. Thompson (Ed.), *Socioemotional development: Nebraska symposium on motivation* (Vol. 36, pp. 367–467). Lincoln: University of Nebraska Press.
- Vasey, M. W., Daleiden, E. L., Williams, L. L., & Brown, L. M. (1995). Biased attention in childhood anxiety disorders: A preliminary study. *Journal of Abnormal Child Psychology*, 23, 267–279.
- Wechsler, D. (1991). *Manual for the Wechsler Intelligence Scale for Children* (3rd ed.). San Antonio, TX: Psychological Corporation.

Manuscript received November 18, 1997

Final revision received December 21, 1999