

## Evaluation of the Automatic Thoughts Questionnaire: Negative Cognitive Processes and Depression Among Children

Alan E. Kazdin  
Yale University

The Automatic Thoughts Questionnaire (ATQ) assesses negative thoughts that are associated with depression among adults. In this study, the scale was extended to children. Internal consistency and validity of the ATQ were evaluated with 250 child psychiatric inpatient children (ages 6 to 13). Validity was evaluated by examining whether depressed and nondepressed children differed on the scale, whether performance was related to other measures of cognitive attributional processes, and whether the measure was more closely related to depression and cognitive processes than to other constructs predicted to be less central to negative thoughts. The ATQ showed high internal consistency and yielded moderate to high item-total score correlations. Convergent validity was supported by the finding that the ATQ correlated positively with severity of depression, hopelessness, and external locus of control and negatively with self-esteem. Discriminant validity was suggested, but not strongly supported, by higher correlations between ATQ and measures of depression and other cognitive processes than between the ATQ and severity of impairment, prosocial behavior, and positive affective experience. The findings in relation to psychometric properties and concurrent validity of the ATQ with children parallel those evident in the study of depression among adults. Further work is needed to examine the relation of the ATQ to other measures of cognitive processes and diagnoses other than depression.

Cognitive processes have been accorded a pivotal role in the etiology, treatment, maintenance, and remission of depression (e.g., Abramson, Metalsky, & Alloy, 1989; Alloy, 1988; Beck, 1987). Although debate about the precise role(s) and scope of cognitive attributional processes continues, research has elaborated multiple features of such processes. Critical to these advances has been the development of measures to assess irrational beliefs, hopelessness, helplessness, and other cognitively related constructs (see Clark, 1988; Rush, 1987). Among such measures is the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980), which has been developed to assess spontaneous negative self-statements and intrusive cognitions as experienced by depressed persons. To that end, adults (college students) were asked to recall depressing situations and then to list their spontaneous thoughts in those situations. The ATQ consists of items that discriminated depressed and nondepressed persons.

Construct validity of the ATQ has been supported by findings that depressed and nondepressed adults, whether clinic or non-clinic samples, evince more negative automatic thoughts and that ATQ scores are correlated in the moderate-to-high range ( $r$ s from .45 to .87) with such measures of depression as the

Beck Depression Inventory and the Depression scale of the Minnesota Multiphasic Personality Inventory (e.g., Bisno, Thompson, Breckenridge, & Gallagher, 1985; Dobson & Breiter, 1983; Dobson & Shaw, 1986; Eaves & Rush, 1984; Harrell & Ryon, 1983; Hollon, Kendall, & Lumry, 1986). The relation between depression and negative thoughts appears to have some generality among adult samples, as reflected in young adults and the elderly, and among alternative diagnostic groups where depressive symptoms are evident (e.g., Hollon et al., 1986; Vezina & Borque, 1984).

To date, the ATQ has been studied exclusively in relation to adult depression. The purpose of the present study was to examine the ATQ in relation to depression and cognitive attributional processes among depressed children. The study evaluated the internal consistency and the criterion, convergent, and discriminant validity of the ATQ. Criterion validity was examined by assessing whether ATQ scores varied for depressed and nondepressed children. On the basis of research with adults and cognitively based views of depression, it was expected that depressed children would report more negative thoughts than nondepressed children. Scores on the ATQ were expected to correlate significantly with measures of severity of depression. Convergent validity was examined by evaluating the relation of the ATQ to measures of cognitive processes. Scores on the ATQ were expected to correlate significantly with negative views of oneself, hopelessness, and a perceived inability to influence outcomes, which have been shown to characterize the cognitions of depressed children and adults (Kazdin, 1989). Finally, discriminant validity was examined by correlating the ATQ with measures of several constructs, including depression, attributional processes, severity of childhood dysfunction, prosocial

---

Completion of this research was supported by Research Scientist Development Award MH00353 and Grant MH35408 from the National Institute of Mental Health.

The author is grateful to Debra Bass, Antoinette Rodgers, and Todd Siegel for assistance with this project.

Correspondence concerning this article should be addressed to Alan E. Kazdin, Department of Psychology, Yale University, P.O. Box 11A Yale Station, New Haven, Connecticut 06520.

behavior, and pleasurable experience. It was expected that the ATQ would correlate more highly with depression and other attributional processes than with the remaining constructs.

## Method

### Participants

The participants included 250 children (64 girls and 186 boys) and their mothers or maternal guardian. The children were consecutive admissions to an inpatient psychiatric facility where children are hospitalized for 2 to 3 months. The facility houses 22 children (ages 5 to 13) at any one time. The children are admitted for acute disorders including aggressive and destructive behavior, suicidal or homicidal ideation or behavior, psychotic episodes, and deteriorating family conditions. To be included in the present study, children were required to be at least 6 years old; have a Wechsler Intelligence Scale for Children-Revised (WISC-R) Full Scale IQ of 70 or higher; have no evidence of neurological impairment, uncontrolled seizures, or dementia; and not be receiving psychotropic medication. The children ranged in age from 6 to 13 years ( $M = 11.1$ ) and in Full Scale IQ from 70 to 133 ( $M = 95.1$ ); 175 children (70.0%) were White; 75 (30.0%) were Black.

Diagnoses of the children were based on criteria in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III)*; American Psychiatric Association, 1980) and were obtained from direct interviews with the children and their parent(s) immediately before admission and from psychiatric evaluation after the child had been admitted. Using these sources of information, two staff independently completed diagnoses for each child. Agreement on principal Axis I diagnosis was relatively high ( $\kappa = .72$ ). In the event of disagreement, the case was discussed to reach a consensus on the appropriate diagnosis. Principal Axis I diagnoses included the following: major depression ( $n = 32$ ), conduct disorder ( $n = 125$ ), oppositional disorder ( $n = 31$ ), adjustment disorder ( $n = 18$ ), attention deficit disorder ( $n = 15$ ), anxiety disorder ( $n = 12$ ), and other mental disorders ( $n = 17$ ). Seventy children (28.0%) received a primary or secondary diagnosis of major depression.

The children's mothers or maternal figures ranged in age from 24 to 70 years old ( $M = 34.9$ ) and included biological mothers ( $n = 86.1\%$ ); step, foster, or adoptive mothers ( $n = 10.3\%$ ); and other female relative or guardian ( $n = 3.5\%$ ). Family social class was calculated by the Hollingshead and Redlich (1958) two-factor index and yielded the following breakdown: Class V, 60.6%; Class IV, 15.5%; Class III, 18.7%; Class II, 4.5%; and Class I, 0.6%. Estimated monthly income for families ranged from \$0 to \$500 to more than \$2,500 (median range = \$0 to \$500); 51.0% of the families were on social assistance.

### Assessment

Children and their mothers were assessed separately within the 1st week to 10 days of the child's admission. For the children, all measures were administered by reading the questions and response alternatives and recording the child's verbal responses. The assessment battery included measures of cognitive processes and depression that were expected to relate to ATQ performance and thereby provide evidence of convergent validity. In addition, measures were selected of other constructs (severity of child's impairment, prosocial behavior, and pleasurable experience); these were expected to correlate less well with the ATQ than measures of cognitive processes and depression and thus provide evidence for discriminant validity.

*Measures of negative thoughts and related cognitive processes.* The primary measure of interest was the ATQ (Hollon & Kendall, 1980). This instrument, completed by the child, assesses the occurrence of negative thoughts and attributions. For each of 30 statements (see Table 1), the child indicates the extent to which the thought has occurred in the

previous week. The responses are provided on a 5-point scale from *not at all* (1) to *all the time* (5). A high total score indicates more frequent negative cognitions.

The ATQ reflects intrusive negative self-statements related to depression. It was expected that ATQ scores would correlate significantly with measures of other attributional features associated with depression such as negative cognitions toward oneself, hopelessness, and perceived inability to influence outcomes. To assess negative cognitions toward oneself, children completed the Self-Esteem Inventory (SEI; Coopersmith, 1967). The SEI presents 58 items that reflect self-esteem, positive worth, and positive self-attributions. Lower scores reflect more negative self-evaluations.

To measure hopelessness or negative expectations toward the future, children completed the Hopelessness Scale for Children (HPLS; Kazdin, Rodgers, & Colbus, 1986). The measure includes 16 true-false items that reflect negative expectations toward the future. Higher scores reflect greater hopelessness or more negative expectations.

To measure the extent to which the children believed they could exert influence and affect outcomes, they completed the Internal-External Locus of Control Scale (IE Scale; Nowicki & Strickland, 1973). The children responded yes or no to each item according to whether it was true for them. Higher scores reflect an external locus of control or the belief that the events and their outcomes are the result of external factors. Individuals high in negative cognitions were expected to show higher externalizing scores, indicating they believe they cannot influence outcomes.

*Measures of childhood depression.* The ATQ was expected to correlate with severity of childhood depression. Three measures of depression were included to reflect different assessment formats (i.e., questionnaire, interview, and card sort). The primary measure of severity of depression was the Children's Depression Inventory (CDI; Kovacs, 1981). The CDI includes 27 items to assess affective, cognitive, and behavioral symptoms. For each item, one of three sentences is endorsed (on a 0- to 2-point scale) that best describes the child over the past 2 weeks. This measure was used to help identify depressed (high CDI) and nondepressed (low CDI) children because of its extensive use for this purpose in research (see Kazdin, 1988).

The Bellevue Index of Depression is a semistructured interview for children and their parents (Petti, 1978). The revised version (BID-R; Kazdin, French, Unis, & Esveldt-Dawson, 1983) includes 29 questions that pertain to depressive symptoms such as looking sad, crying easily, and thinking about death. Symptoms are evaluated on a 5-point scale for severity from *not at all* (1) to *very much* (5) and on a 3-point scale for duration from *new problem* (1) to *always* (3). The sum of severity and duration ratings provides a total score for depressive symptoms.

The Children's Depression Scale (CDS; Lang & Tisher, 1978) was also administered. The CDS includes 66 items divided into two broad scales, depression (48 items) and positive affective experience (18 items). The depression scale includes subscales measuring affective responses, self-esteem, preoccupation with sickness and death, and others. The positive experience scale includes a pleasure and enjoyment scale and miscellaneous positive items. Each CDS item is printed on a separate card that is read to the child. The child places the card in one of five premarked boxes that reflect a Likert-type scale (1 = *very wrong* [unlike me], 5 = *very right* [like me]). Higher scores on the scales reflect a greater degree of depressive symptoms or diminished enjoyment and positive experience. It was expected that ATQ scores would correlate significantly with the CDS depression scale score and more highly with that score than with the positive experience scale score. Psychometric properties of the CDS, CDI, and BID-R, noted previously, including internal consistency, test-retest reliability, and construct validity have been detailed elsewhere (Kazdin, 1988).

*Measures of severity of dysfunction.* It is possible that negative thoughts are associated with severity of impairment, rather than with

depression. To assess severity of dysfunction, the children's mothers completed the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). The measure includes 118 items scored on a 0- to 2-point scale to cover multiple symptom areas that have been derived through factor analyses completed separately for boys and girls in different age groups. Of interest for present purposes were the broadband scales measuring internalizing, externalizing, and total behavior problems. These three scales assess different types of symptoms as well as overall severity of dysfunction and are available for each age and sex group. As a partial test of discriminant validity, it was expected that ATQ scores would correlate more highly with the previously mentioned measures of cognitive processes and depression than with severity of dysfunction on the CBCL scales.

*Measures of social behavior.* Measures of interpersonal behavior were also included. Negative thoughts might be reflected in social impairment, through their common association with depressive symptoms. However, conceptual views of depression have posed a direct connection between negative attributions and depressive symptoms. Thus, it was expected that ATQ performance would be more highly correlated with measures of cognitive processes and depression than with measures of social behavior. To measure social behavior, children completed the Matson Evaluation of Social Skills with Youngsters (MESSY; Matson, Rotatori, & Helsel, 1983). The scale includes 92 items rated on a 5-point scale from *not at all* (1) to *very much* (5) and samples diverse areas of positive and negative social behaviors, including conversational skills, making friends, social isolation, and expressing hostility. The MESSY yields a total social skill score that is derived from summing positive and negative scores in the measure. Internal consistency and construct and criterion validity have been elaborated in previous research (Matson et al., 1983).

An additional measure of social behavior was provided by the parent-completed CBCL, mentioned previously. The CBCL includes a social competence scale that comprises three subscales: participation in activities, social interaction, and school progress (Achenbach & Edelbrock, 1983). It was expected that for both the MESSY and CBCL, social competence scores would correlate less well with the ATQ than with measures of cognitive processes and depression.

## Results

### *Preliminary Analyses*

The total sample ( $N = 250$ ) obtained a mean ATQ score of 68.5 ( $SD = 29.7$ ). In order to evaluate whether total ATQ scores varied as a function of subject and demographic variables, separate analyses of variance (ANOVAs) were completed for characteristics of children (age, sex, race, and IQ) and their mothers (age, race, Hollingshead class, and welfare status). Continuous variables (e.g., age) were analyzed by using median splits. Significant overall effects were obtained for total ATQ scores as a function of child Full Scale WISC-R IQ,  $F(1, 234) = 6.27, p < .05$ . Youths below the median WISC-R IQ (93) were higher in negative thoughts than youth above the median ( $M = 72.4$  vs. 62.8, respectively). No other effects were obtained as a function of subject and demographic variables.

### *Internal Consistency*

An examination of the internal consistency of the ATQ yielded a coefficient alpha of .96 and Spearman-Brown coefficient of .94. These statistics suggest a high level of internal consistency. Individual item-total score correlations, presented in Table 1, were in the moderate to high range ( $r_s = .39$  to  $.81$ ).

The mean item-total correlation, averaged by Fisher's  $z'$  transformation, was .69 ( $p < .001$ ).

Factor analyses were completed to examine the internal structure of the scale. A principal-components analysis was completed. An oblique rotation (oblimin) was selected because, on a priori grounds, there was no reason to expect (and extract) orthogonal or unrelated components. Indeed, theories of depression often posit that several cognitive processes (e.g., hopelessness and helplessness) are interrelated (e.g., Abramson et al., 1989; Beck, 1987). Using an eigenone criterion, three factors emerged and accounted for 56.3% of the variance. However, other criteria suggested that performance on the scale might be adequately represented by a single factor. These criteria included high internal consistency of the scale, the loading ( $\geq .30$ ) of all but one item (item 15) on the first factor in the structure matrix, and the large drop in eigenvalues between the first and second factors (eigenvalues = 14.37 and 1.40, respectively). A single factor was suggested further by a second factor analysis, which used a different (varimax) rotation. The results indicated that after rotation the majority of items (25 of 30) loaded ( $\geq .30$ ) on the first factor.<sup>1</sup> In light of these results, the total ATQ score, rather than separate factor scores, was used to represent the scale.

### *Criterion Validity: Depressed Versus Nondepressed Children*

*Total scores.* Negative thoughts, as measured by the ATQ, have been shown to relate to depression among adult patient and nonpatient samples. It was expected that depressed children would evince more negative self-statements than nondepressed children. Children ( $n = 43$ ) were considered depressed if they met *DSM-III* criteria for major depression and attained a score 12 or higher on the CDI. A score of 12 reflects the median score for children in the present study and has been shown to provide the score for the self-report version that maximizes sensitivity and specificity in selecting depressed cases (Kazdin, Colbus, & Rodgers, 1986). Nondepressed cases ( $n = 95$ ) were those children who did not meet diagnostic criteria for depression and whose CDI scores were 11 or lower. A one-way ANOVA of total ATQ scores indicated that depressed children were significantly higher in negative thoughts than were nondepressed children ( $M = 82.8$  vs. 52.9),  $F(1, 136) = 47.02, p < .001$ .

It is possible that differences between depressed and nondepressed children on the ATQ resulted from differences in subject or demographic variables that covaried with depression. However, depressed and nondepressed children did not differ

<sup>1</sup> In the original development of the ATQ, a principal-components factor analysis was used with varimax rotation (Hollon & Kendall, 1980). For comparative purposes, the same analysis was also conducted in the present study using principal components, varimax rotation, eigenone criterion, and a loading of .50 or higher. The results yielded three factors. Factor 1 comprised items 10, 17, 18, 20-25, and 27-29; Factor 2 comprised items 1-8 and 13; and Factor 3 comprised items 12, 14, and 19. These factors overlap considerably with those obtained from the oblique rotation of the present study. Further details regarding the factor analyses and item loadings of the present study can be obtained from the author.

Table 1  
*Automatic Thoughts Questionnaire: Item–Total Score Correlations, Item–Discriminant Function Correlations, and F Tests for Depressed Versus Nondepressed Children*

Item	Item–total score $r$	Item–discriminant function $r$	$F(1, 122)$
1. The world doesn't like me.	.63	.23	9.13
2. I'm no good.	.70	.20	7.27
3. Why can't I do anything right?	.64	.37	23.66
4. No one understands me.	.58	.39	26.85
5. I have let people down.	.72	.25	10.80
6. I don't think I can go on.	.72	.56	54.67
7. I wish I were a better boy/girl.	.62	.29	15.19
8. I'm not strong at all.	.53	.18	6.00
9. My life is not going the way I want it to.	.66	.29	15.16
10. I'm so disappointed in myself.	.81	.35	21.63
11. Nothing feels good anymore.	.70	.24	9.94
12. I can't stand this anymore.	.64	.34	20.59
13. I can't get anything started.	.70	.22	8.86
14. What's wrong with me?	.72	.24	10.20
15. I wish I were somewhere else.	.40	.27	13.11
16. I can't get things together. (I can't get my act together.)	.70	.32	17.49
17. I hate myself.	.76	.35	21.03
18. I'm not worth anything.	.75	.27	12.92
19. I wish I could just disappear.	.67	.33	19.58
20. What's the matter with me?	.75	.40	28.15
21. I'm a loser.	.74	.29	14.74
22. My life is a mess.	.67	.43	32.54
23. I can't do anything well.	.79	.30	15.36
24. I feel so helpless.	.76	.41	29.73
25. I'll never make it.	.75	.36	22.33
26. Something has to change.	.60	.33	18.76
27. There must be something wrong with me.	.76	.55	52.47
28. When I grow up, things will be bad.	.67	.36	22.19
29. It's just not worth it.	.76	.23	9.01
30. I can't finish anything.	.71	.42	31.34

Note. All item–total score correlations are significant at  $p \leq .001$  ( $N = 250$ ); all  $F$ s are significant at  $p \leq .01$ .

significantly in age, sex, race, Full Scale WISC–R IQ, mother's age, Hollingshead class, and family income, as examined with ANOVAS (for continuous variables) and chi-square tests (for discrete variables). Subject and demographic variables alone or in combination with depression (i.e., as a main effect or as an interaction) did not account for the differences in ATQ scores between depressed and nondepressed children.

It is also possible that depressed children were more severely disturbed than nondepressed children and that differences in negative automatic thoughts are associated with severity of child dysfunction, rather than with depression. Yet depressed and nondepressed children did not differ in severity of impairment, as measured by the total behavior problem score of the CBCL ( $F < 1$ ). Possibly internalizing types of disorders (i.e., those that are inward directed), rather than depression per se, are associated with negative thoughts. Using principal Axis I *DSM-III* diagnoses, youths with internalizing disorders (depression and anxiety) were compared with those with externalizing disorders (conduct, oppositional, and attention deficit disorders). The results yielded no differences in total ATQ scores ( $F < 1$ ). Similarly, separate analyses, using a median split on internalizing and externalizing scales of the CBCL, indicated that children scoring high and low in internalizing or externaliz-

ing did not differ in total ATQ scores (both  $F$ s  $< 1$ ). The present analyses suggest that depression is associated with ATQ scores rather than severity of dysfunction more generally.

*Individual item responses.* A difference in the overall total score between depressed and nondepressed children masks the pattern of responding on individual items. Of interest in evaluating the scale is whether depressed children evince more negative thoughts than nondepressed children on the individual items. A multivariate test, completed across the 30 ATQ items, yielded a significant overall effect, Hotelling's  $T^2(30, 103) = 4.22, p < .001$ .

In order to identify the extent to which individual items differentiated depressed and nondepressed cases and which items contributed most to such a differentiation, a discriminant analysis was conducted. The direct method was used to enter each item into the equation. Table 1 presents the items, their within-group correlations with the discriminant function, and univariate  $F$  tests comparing depressed and nondepressed children. The results indicated that depressed children were significantly more negative on each of the ATQ items. The items that best differentiated between depressed and nondepressed children were "I don't think I can go on," "There must be something wrong with me," and "My life is a mess" (items 6, 27, and

22, respectively); the items that differentiated between depressed and nondepressed children least well, albeit statistically significant, were "I'm not strong at all," "I'm no good," and "I can't get anything started" (items 8, 2, and 13, respectively).

Using the items to classify patients as depressed versus not depressed yielded a significant discriminant function, Wilks's lambda = .45,  $\chi^2(30, N = 134) = 93.78, p < .001$ . The canonical correlation, which measures the degree of association between discriminant scores and group membership, was .74. Using all 30 items for the discriminant function, 85.7% of the depressed children and 92.4% of the nondepressed children were correctly classified; the overall classification accuracy for all patients was 90.3%.

### *Negative Automatic Thoughts and Related Constructs*

**Convergent validity.** The relation of negative automatic thoughts to other measures completed by children and parents was examined by computing Pearson product-moment correlations. On the basis of research with adults and cognitive theories of depression, it was expected that performance on the ATQ would correlate significantly with depression-related cognitive attributional processes as well as with measures of severity of depression. The Bonferroni adjustment for alpha was used to control for experimentwise error rates, given the number of correlations computed. For an alpha of .05, the adjustment required a correlation with a  $p \leq .004$  for significance.

As shown in Table 2, performance on the ATQ correlated significantly with other measures of cognitive processes related to depression. Children who indicated more negative thoughts showed lower self-esteem, greater hopelessness, and a more external attribution of control. Also, the ATQ and measures of depression were significantly correlated. The correlations among the ATQ, cognitive processes, and depression support the convergent validity of the ATQ.

**Discriminant validity.** Measures were included to address the discriminant validity of the ATQ. It was expected that performance on the ATQ would be more highly related to cognitive processes and depression, as discussed previously, than with severity of impairment (CBCL total behavior problem scale), prosocial behavior (the MESSY and the CBCL social competence scale), or positive affective experience (CDS positive experience scale).

As can be seen in Table 2, the ATQ did not correlate significantly with severity of impairment or social competence on the CBCL. These findings would seem to support the discriminant validity of the ATQ. However, the absence of significant correlations might have been due to the different raters (child completion of the ATQ vs. parent completion of the CBCL). Of special interest for discriminant validity are the correlations between the ATQ and other child-completed measures where the method (rater) variance did not vary. Scores on both the child-completed MESSY and the child-completed CDS positive experience scales correlated significantly with ATQ scores ( $r_s = -.47$  and  $.40$ , respectively). These correlations are within the same general range as the correlations between the ATQ and cognitive processes and depression (Table 2).

In order to evaluate whether the ATQ correlated more highly with measures of cognitive processes and depression than with

child-completed measures of prosocial functioning (MESSY) and positive affective experience (CDS),  $t$  tests were computed between dependent correlations (Guilford, 1965). Significant differences would provide support for the ATQ's discriminant validity. The ATQ-MESSY correlation was significantly lower than the ATQ correlations with cognitive process and depression measures for two of the six comparisons. Specifically, the ATQ-SEI and ATQ-CDS depression correlations were significantly higher than the ATQ-MESSY correlation,  $t_s(247) = 4.25$  and  $3.99$ , respectively, both  $p_s < .01$ .

Tests of the correlation between the ATQ and CDS positive experience scores also provided evidence for discriminant validity. The correlation between the ATQ and cognitive process or depression measures was significantly higher than the ATQ-positive experience correlation in four of six tests. Correlations between the ATQ and the CDI, BID, SEI, and CDS depression scores were all significantly higher than the ATQ-positive experience correlation— $t_s(df = 247)$  ranged from 2.73 to 5.44, with all  $p_s < .01$ . These results suggest that the ATQ tended to correlate more highly with other measures of cognitive processes and with depression than with measures of prosocial behavior and positive affective experience.

Tests of the differences between correlations notwithstanding, the pattern of correlations (Table 2) does not provide strong evidence for discriminant validity. Across the entire set of correlations, those measures that shared a common rater tended to correlate in the moderate range. A marked pattern showing that the ATQ correlated more strongly with depression and cognitive processes than with the other constructs is not evident.

## Discussion

The present study examined the Automatic Thoughts Questionnaire with psychiatrically disturbed children. The results indicate that (a) the ATQ reflects acceptable levels of internal consistency, as evident in high coefficients of reliability and moderate to high item-total correlations; (b) children who were depressed evinced significantly higher scores on the overall scale as well as for each of the items; (c) performance on the individual items correctly classified 90% of the depressed and nondepressed cases; and (d) ATQ scores correlated significantly with other measures of negative attributional processes (e.g., low self-esteem, hopelessness, and external locus of control) and severity of depression. Overall, the results of the present study suggest that the ATQ can be readily completed by children and that performance relates to negative attributional processes among children in a fashion that parallels findings with depressed adults.

The present study provides evidence for the criterion validity of the ATQ in delineating depressed and nondepressed children. The association between depression and ATQ in the present study did not seem to be accounted for by overall severity of dysfunction or the other internalizing disorders. However, an insufficient number of cases was available to explore anxiety disorders which are often comorbid with depression. Further evaluation of the ATQ in relation to anxiety is needed with both adults and children.

The significant correlations of the ATQ with measures of cog-

Table 2  
*Correlations of the Automatic Thoughts Questionnaire (ATQ) With Other Measures*

Measure	Total ATQ score ( <i>N</i> = 250)
Attribution/cognitive processes	
Self-esteem Inventory (Coopersmith, 1967)	-.66*
Hopelessness Scale for Children (Kazdin, Rogers, & Colbus, 1986)	.49*
Internal-External Locus of Control Scale (Nowicki & Strickland, 1973)	.44*
Childhood depression	
Children's Depression Inventory (Kovacs, 1981)	.57*
Bellevue Index of Depression-Revised (Kazdin, French, Unis, & Esveldt-Dawson, 1983)	.56*
Children's Depression Scale (Lang & Tisher, 1978)	
Depression Total	.67*
Positive Affective Experience Total	.40*
Severity of dysfunction	
Child Behavior Checklist (Achenbach & Edelbrock, 1983)	
Internalizing	.07
Externalizing	.04
Total Behavior Problems	.09
Social functioning	
Matson Evaluation of Social Skills with Youngsters (Matson, Rotatori, & Helsel, 1983)—Total Social Skills	-.47*
Child Behavior Checklist—Social Competence Total	-.07

*Note.* The Bonferroni corrected alpha level for  $p = .05$  given the number of correlations computed is  $p = .004$ . Correlations identified as significant ( $p < .001$ ) met this level.

\*  $p < .001$ .

nitive processes and depression provide evidence for convergent validity of the ATQ. Just as important, if not more important, is evidence for discriminant validity. The results suggest that the ATQ correlated more highly with measures of cognitive processes and depression than with measures of social behavior and positive affective experience. These latter measures shared method variance (child self-report) with the ATQ but were expected on a priori grounds to correlate less well with ATQ performance than measures of more centrally related constructs. The results provided weak support for discriminant validity. The magnitudes of the correlations between the ATQ and all other child-completed measures were within a relatively narrow range (.40 to .67). Thus, the case for discriminant validity is not persuasive in the present study.

The present study raises several issues and limitations. First, the validity evidence warrants critical scrutiny. Both the criteria for delineating depressed and nondepressed children and the assessment of cognitive processes and severity of depression used reports of the child. The correlations between the ATQ and measures of cognitive processes and severity of depression might well have been due to the fact that these were all self-report scales. The fact that the ATQ correlated moderately with social behavior on the child-completed measures (MESSY) but did not correlate with the parent-completed measure (CBCL social competence) further underscores the potentially significant, if not dominant, role of common rater variance in convergent validity evidence of the present study and parallel studies of the ATQ with adults. Future research is needed to examine the relation of the ATQ to a broader range of assessment modalities.

Another limitation pertains to the use and interpretation of

the ATQ. The items were originally developed by sampling intrusive thoughts of depressed adults. The interpretation of the ATQ in its extension to children must be qualified. The items characterize intrusive thoughts of young depressed adults. The present study suggests that such items may characterize the cognitions of depressed children as well. However, there may be quite different spontaneous thoughts that better characterize depressed children if one were to develop a new measure using the original methodology (Hollon & Kendall, 1980). The present study evaluated the ATQ as originally developed because the ATQ items reflect statements (e.g., "No one understands me") commonly voiced and readily understood by school-age children (cf. Kazdin et al., 1986). Thus, the scale appears quite applicable to children as well as adolescents and adults. Also, if the measure is psychometrically sound among children as well as adults, the possibility of using the measure across diverse age groups holds promise. Yet, the present findings do not necessarily shed light on the spontaneous thoughts of depressed children or on the overlap in content of such thoughts with those of adults.

A number of critical research questions are raised by the present findings. To begin, the present results suggest that the ATQ can be used to assess negative cognitive processes among children. However, many measures of negative cognitive processes have emerged for use with depressed adults and children (see Clark, 1988; Kazdin, 1988). It is likely that the many measures overlap and are redundant, albeit they have been proposed to evaluate slightly different constructs. Although the development of theoretically based measures needs to be fostered, evaluations are needed to avoid redundant proliferation. Further research is needed to identify the overlap and possible redun-

dancy of alternative measures and their utility for alternative purposes.

Second, cognitively based measures have focused almost exclusively on negative attributions. However, positive cognitive attributions warrant attention as well. Ingram and Wisnicki (1988) developed a measure of positive automatic conditions and found performance among adults to correlate in the low range ( $r = .29$ ) with automatic negative thoughts (ATQ). Similarly, in studies with children, depression and positive affective experience correlate in the low to moderate range ( $r_s = .36$  and  $.53$  for child- and parent-completed measures of child depression, respectively) (Kazdin, 1987). These findings suggest that negative and positive affect and attributions are not merely opposite sides of a continuum (bipolar). Further work on negative and positive cognitive processes is warranted, given their possibly separate roles in clinical dysfunction (see Schwartz, 1986). The present study suggests that the ATQ can be applied to children and provide data consistent with findings obtained in the study of depression among adults.

### References

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358-372.
- Achenbach, T. M., & Edelbrock, C. S. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University Associates in Psychiatry.
- Alloy, L. B. (Ed.). (1988). *Cognitive processes in depression*. New York: Guilford.
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy. An International Quarterly*, *1*, 5-37.
- Bisno, B., Thompson, L. W., Breckenridge, J., & Gallagher, D. (1985). Cognitive variables and the prediction of outcome following an intervention for controlling depression. *Cognitive Therapy and Research*, *9*, 527-538.
- Clark, D. A. (1988). The validity of measures of cognition: A review of the literature. *Cognitive Therapy and Research*, *12*, 1-20.
- Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco, CA: W. H. Freeman.
- Dobson, K. S., & Breiter, H. J. (1983). Cognitive assessment of depression: Reliability and validity of three measures. *Journal of Abnormal Psychology*, *92*, 107-109.
- Dobson, K. S., & Shaw, B. F. (1986). Cognitive assessment with major depressive disorders. *Cognitive Therapy and Research*, *10*, 13-29.
- Eaves, G., & Rush, A. J. (1984). Cognitive patterns in symptomatic and remitted unipolar major depression. *Journal of Abnormal Psychology*, *93*, 31-40.
- Guilford, J. P. (1965). *Fundamental statistics in psychology and education* (4th ed.). New York: McGraw-Hill.
- Harrell, T. H., & Ryon, N. B. (1983). Cognitive-behavioral assessment of depression: Clinical validation of the Automatic Thoughts Questionnaire. *Journal of Consulting and Clinical Psychology*, *51*, 721-725.
- Hollingshead, A. B., & Redlich, F. C. (1958). *Social class and mental illness*. New York: Wiley.
- Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an Automatic Thoughts Questionnaire. *Cognitive Therapy and Research*, *4*, 383-395.
- Hollon, S. D., Kendall, P. C., & Lumry, A. (1986). Specificity of depressed cognitions in clinical depression. *Journal of Abnormal Psychology*, *95*, 52-59.
- Ingram, R. E., & Wisnicki, K. S. (1988). Assessment of positive automatic cognition. *Journal of Consulting and Clinical Psychology*, *56*, 898-902.
- Kazdin, A. E. (1987). Children's Depression Scale: Validation with child psychiatric inpatients. *Journal of Child Psychology and Psychiatry*, *28*, 29-41.
- Kazdin, A. E. (1988). Childhood depression. In E. J. Mash & L. G. Terdal (Eds.), *Behavioral assessment of childhood disorders* (2nd ed., pp. 157-196). New York: Guilford.
- Kazdin, A. E. (1989). Developmental differences in depression. In B. B. Lahey & A. E. Kazdin (Eds.), *Advances in clinical child psychology* (Vol. 12, pp. 193-219). New York: Plenum.
- Kazdin, A. E., Colbus, D., & Rodgers, A. (1986). Assessment of depression and diagnosis of depressive disorder among psychiatrically disturbed children. *Journal of Abnormal Child Psychology*, *14*, 499-515.
- Kazdin, A. E., French, N. H., Unis, A. S., & Esveldt-Dawson, K. (1983). Assessment of childhood depression: Correspondence of child and parent ratings. *Journal of the American Academy of Child Psychiatry*, *22*, 157-164.
- Kazdin, A. E., Rodgers, A., & Colbus, D. (1986). The Hopelessness Scale for Children: Psychometric characteristics and concurrent validity. *Journal of Consulting and Clinical Psychology*, *54*, 241-245.
- Kovacs, M. (1981). Rating scales to assess depression in school aged children. *Acta Paedopsychiatrica*, *46*, 305-315.
- Lang, M., & Tisher, M. (1978). *Children's Depression Scale*. Victoria, Australia: Australian Council for Educational Research.
- Matson, J. L., Rotatori, A. F., & Helsel, W. J. (1983). Development of a rating scale to measure social skills in children: The Matson Evaluation of Social Skills with Youngsters (MESSY). *Behaviour Research and Therapy*, *21*, 335-340.
- Nowicki, S., & Strickland, B. R. (1973). A locus of control scale for children. *Journal of Consulting and Clinical Psychology*, *40*, 148-154.
- Petti, T. A. (1978). Depression in hospitalized child psychiatry patients: Approaches to measuring depression. *Journal of the American Academy of Child Psychiatry*, *22*, 11-21.
- Rush, A. J. (1987). Measurement of the cognitive aspects of depression. In A. J. Marsella, R. M. A. Hirschfeld, & M. Katz (Eds.), *The measurement of depression* (pp. 267-296). New York: Guilford.
- Schwartz, R. M. (1986). The internal dialogue: On the asymmetry between positive and negative coping thoughts. *Cognitive Therapy and Research*, *10*, 591-605.
- Veizina, J., & Borque, P. (1984). The relationship between cognitive structure and symptoms of depression in the elderly. *Cognitive Therapy and Research*, *8*, 29-36.

Received April 28, 1989

Revision received July 19, 1989

Accepted July 31, 1989 ■