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Assessment of Anxiety and Depression in Young Children: Support for Two Separate Constructs

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Validated the interrelatedness of depression and anxiety in young children by testing four latent factor models: dual construct, unrelated; dual construct, correlated; single construct; and second-order or higher order analysis to test that depression and anxiety are primary constructs under the higher order factor of general affective distress. Children (N = 86) were ages 6 to 11, with mothers who were HIV-symptomatic or diagnosed with AIDS. Depression and anxiety measures included the Children's Depression Inventory (Kovacs, 1992), selected items from the Dominic–R (Valla, Bergeron, Berube, Gaudet, & St-Georges, 1994), and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985). Structural equation modeling was used to test the models. Model 2 (dual construct, correlated) fit the data better than did Models 1 and 3; results for the higher order model were identical to Model 2, suggesting the higher order model is equivalent to the dual-construct model.

The relation between anxiety and depression has been a subject of debate for some time. It has been proposed (a) that they are a unitary construct, that is, they are so highly interrelated as to represent a single underlying dimension; (b) that they are syndromes that are highly overlapping but have unique components; or (c) that they are conceptually distinct phenomena (Boyd & Gullone, 1997; Burns & Eidelson, 1998; D. A. Clark, Steer, & Beck, 1994; L. A. Clark & Watson, 1991; Cole, Truglio, & Peeke, 1997; Crowley & Emerson, 1996; Foa & Foa, 1982; Hinden, Compas, Howell, & Achenbach, 1997; Ollendick & Yule, 1990; Stavrakaki & Vargo, 1986).

Proponents of the unitary model view anxiety and depression as two ends of a continuum and have proposed that the single construct be labeled "negative affectivity" (Finch, Lipovsky, & Casat, 1989; Watson & Clark, 1984; Wolfe et al., 1987). Investigators who believe the constructs share significant overlap have suggested that a tripartite model (e.g., L. A. Clark & Watson, 1991; Lerner et al., 1999; Seligman & Ollendick, 1998) with a new label of *mixed anxiety–depression* or *negative affectivity* be used for the common component of these two constructs. Those who believe that anxiety and depression are distinct argue that definitions should be used that are independent of each other in assessing these constructs, excluding items that are common to the two syndromes so that there is no overlap.

Several issues have complicated the debate regarding the relation between anxiety and depression. One is that measures used to assess anxiety or depression typically have included items specific to anxiety (e.g., specific fears, worry, autonomic hyperactivity, and motor tension) or to depression (e.g., sadness, suicidal tendencies, loss of interest or pleasure) but also items common to both (e.g., poor concentration or indecisiveness, insomnia, fatigue, irritability). A second is that multiple levels of meaning are related to the terms *anxiety* and *depression* (L. A. Clark & Watson, 1991); the terms may be used to refer to mood states, or they may be used to refer to diagnostic symptom clusters or syndromes. The relations between the constructs may not be the same across these levels of meaning. Finally, different measures and different populations (Stavrakaki & Vargo, 1986) have been selected across studies of the relation between anxiety and depression.

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Although much of the research attempting to determine the extent of overlap between anxiety and depression has been focused on adults, there has been an increased interest regarding whether these two dimensions have a similar meaning for children as for adults and regarding the strength of the relation between the two constructs among children. Several well-designed studies have found support for a unified model among young children. For example, Cole et al. (1997) found an extremely high correlation between anxiety and depression factors among third-grade children (.90), even after controlling for shared method variance. Among sixth graders, higher levels of convergent validity and a somewhat smaller correlation between the anxiety and depression factors (.72) were found. These investigators suggested that if dimensions are actually indistinguishable in young children, then possibly the term *negative affectivity* should be used; they also suggested that if the dimensions diverge with age—but not completely—then perhaps the tripartite model of anxiety, depression, and negative affectivity could be used for older children, similar to the model proposed for adults by L. A. Clark and Watson (1991).

Support for the uniqueness of the dimensions of anxiety and depression comes from findings from several lines of study. Among nonreferred schoolchildren, Crowley and Emerson (1996) investigated whether a one- or two-factor model would best fit the data. The two-factor model was identified as best; results indicated that the distinction between anxiety and depression was maintained. In another nonreferred sample of 8- to 11-year-old elementary school children, results of a multitrait–multimethod design indicated that although a strong association between depression and anxiety was present, they were distinguishable, because overall significant discriminant validity was obtained (Epkins & Meyers, 1994). The investigators concluded that in nonreferred children, the constructs are separate and not reflective of a unitary negative affectivity construct. Among a much larger sample of nonreferred adolescents (N = 783), although correlations showed that anxiety and depression were closely related, exploratory factor analyses revealed that they loaded on separate and distinct factors (Boyd & Gullone, 1997). Furthermore, Lerner et al. (1999) found that although anxious and depressive self-statements among a sample of 306 children were highly related, they had empirically and theoretically meaningful areas of separation, consistent with a tripartite model. Support for the distinction between anxiety and depression among child patient groups also has been reported (Stavrakaki, Vargo, Boodoosingh, & Roberts, 1987). Finally, in an attempt to investigate the tripartite model of anxiety and depression among children, Lonigan, Hooe, David, and Kistner (1999) conducted confirmatory factor analysis on self-reported affect among school children in the 4th to 11th grade. Results supported a two-factor orthogonal model that was invariant across age and sex.

The nature of the relation between anxiety and depression becomes further complicated when developmental factors are considered. The mean age of children with anxiety disorders tends to be younger than the age of children with depressive disorders (e.g., Hershberg, Carlson, Cantwell, & Strober, 1982; Kovacs, Gatsonis, Paulauskas, & Richards, 1989; Stavrakaki et al., 1987). In a 3-year study of elementary school children, anxiety and depression questionnaires were completed every 6 months (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998). High levels of anxiety symptoms at one point in time predicted high depressive symptoms at subsequent points, supporting the temporal hypothesis that anxiety leads to depression in children. In a recent and extensive review of this issue, Seligman and Ollendick (1998) concluded that anxiety and depression seem to share a common component (i.e., negative affectivity), while having distinguishing features. They also theorized that anxiety and depression may best be described by a tripartite model for older youths, but a unitary model may best describe the relation among younger children.

Studies investigating the relation between anxiety and depression have used either a sample of children being seen at psychiatric clinics or a normal sample of children typically recruited through schools. The investigators of these studies note that the generalizability of their results may be limited because of this, and their findings may be specific to the sample used (e.g., Epkins & Meyers, 1994; Lerner et al., 1999). In fact, investigators have noted that it cannot be assumed that clinically referred participants are the same as nonreferred participants, because there may be higher comorbidity in referred participants (Costello & Angold, 1988). This is consistent with the fact that differentiating depression and anxiety at the mood, symptom, and syndromal levels has been a long-standing problem (D. A. Clark et al., 1994).

Using different populations, such as a sample of normal children undergoing some stressful life situation, may assist in clarifying the relation between anxiety and depression. Moreover, using such a sample of children who are somewhat "in-between"—not clinically referred but not a normal community or school sample—assists in bridging the gap between findings of those types of samples and assists in estimating how generalizable such findings may be. In this study, a sample of 86 well children ages 6 to 11 years and their mothers who were HIV-symptomatic or had AIDS were administered anxiety and depression measures. Children living with ill parents have been found to have somewhat increased incidences of anxiety and depression (e.g., Forsyth, Damour, Nagler, & Adnopoz, 1996; Murphy, Kaufman, & Swendeman, 1998; Rait & Lederberg, 1989; Siegel et al., 1992). Even in families

in which mothers with AIDS have chosen not to disclose their status to their younger children, which is typical (e.g., Murphy et al., 1996, 1998), research indicates that psychological distress may be apparent in the children because of guilt they feel for a disordered family environment whose source they cannot identify (Weiner & Septimus, 1990). Children who found out their mothers' status, but had not previously been told, frequently reported knowing something was wrong but feeling unable to ask about the cause (Nagler, Adnopoz, & Forsyth, 1995). Therefore, although we did not assume that the sample for this study would exhibit anxiety and depression at the levels that referred children would, we assumed they would be more likely to have somewhat higher levels than nonreferred children. The goal of this study was to explore the relation of anxiety and depression among a sample of young children affected by HIV/AIDS.

Method

Participants

One hundred twenty mothers with a diagnosis of AIDS or who were HIV-symptomatic were recruited through primary care and AIDS service organization sites in Los Angeles County from November 1997 through January 1999. Recruitment of participants was undertaken by agency staff who reviewed patient files, identified eligible families, and obtained verbal consent for UCLA interviewers to contact potential participants. In addition, flyers and brochures for the project were available, and patients/clients could contact study staff. Inclusion criteria were as follows: confirmation of either AIDS diagnosis or HIV-symptomatic status of a mother who had a well child age 6 to 11, and English or Spanish speaking. AIDS diagnosis and HIV-symptomatic status were verified through a review of participating mothers' medical records.

A subset of mothers (n = 86) and their children provided complete data on measures of depression and anxiety for this analysis. Demographic characteristics of the cohort are presented in Table 1. The mean age for the children was 8.43 years (SD = 1.77); 51% were male. Racial/ethnic composition of the children as reported by their mothers was 38% African American, 27% Hispanic, 18% mixed, 12% Caucasian, and 6% Native American.

Almost half of the mothers (47%) had not completed high school; 31% had completed high school or received their Graduate Equivalent Degree; 21% had completed an undergraduate degree, some college, or vocational or technical training; and 1% had a graduate college degree. The majority of the women were not married (73%). Almost all of the mothers were prescribed highly active antiretroviral therapy (92%). To assess the severity of their HIV illness status, medical chart abstractions were conducted (n = 56). Viral load (ribonucleic acid copies per milliliter) for the women was as follows: 38% of the women had viral loads of 400 or less; 45% were in the 401 to 10,000 category; 5% were in the 10,001 to 50,000 category; and 13% had viral loads of over 50,000. CD4+ counts (n = 64), which are used as an index or measurement of total functioning of the immune system such that counts of less than 200 indicate AIDS, ranged from 6 to 877 (M = 349.50, SD = 210.60). Therefore, viral load and CD4+ counts indicated that overall, these mothers with HIV/AIDS were fairly healthy.

Procedures

At recruitment sites, potentially eligible families were identified, and consent was obtained for research

Table 1. Demographic Characteristics of Cohort

	n	%
Mothers[a]		
Marital Status		
Married	23	27
Separated	11	13
Divorced	8	9
Widowed	18	21
Never Married	26	30
Education		
< 9th Grade	16	19
9th–11th Grade	24	28
12th Grade	26	30
Vocational/Technical	4	5
Some College	10	12
College Degree (Undergraduate)	4	5
College Degree (Graduate)	1	1
Graduate Equivalent Degree	1	1
Current Living Situation[b]		
In Own House or Apartment	70	82
At Parents or Other Relative's House or Apartment	9	11
At Someone Else's House or Apartment	3	4
In a Shelter; Welfare Hotel; or Rooming, Boarding, or Halfway house	3	4
Children[c]		
Sex		
Female	42	49
Male	44	51
Race/Ethnicity[b]		
Native American	5	6
Asian/Asian American	0	0
African American	32	38
Latina or Latino/Hispanic	23	27
Mixed	15	18
Caucasian	10	12
Highest Grade Completed[b]		
<Kindergarten	2	2
Kindergarten–2nd Grade	45	52
3rd Grade–4th Grade	29	34
5th Grade–6th Grade	9	12

[a] N = 86. [b] One participant gave responses outside the possible categories. [c] N = 86.

staff to contact potential participants. Consent was obtained for medical chart review to verify eligibility, and for eligible participants, informed consent and child assent for study participation were obtained and baseline interviews were conducted. Children were told that this was a study about how families get along. A team of two bilingual interviewers conducted the interviews at the family's home, the recruitment site, or the research offices, depending on the family's preference. Computer-assisted personal interview was used by the interviewers.

Parents were paid $25 and children selected a toy worth $10 from a toy chest (or $10 in cash if requested) immediately after the assessment was completed. The mothers' interviews took approximately 75 min to complete.

Measures

Depression. Symptoms of depression were assessed with the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is patterned after the Beck Depression Inventory; it includes 27 items that refer to affective, cognitive, and behavioral symptoms of depression. It is the most widely used self-report measure of childhood depression (Curry & Craighead, 1993). Reliability studies have shown that the scale typically has a coefficient alpha in the mid-80s (Craighead, Smucker, Craighead, & Ilardi, 1998) and that test–retest is high ($r = .87$; Saylor, Finch, Spirito, & Bennett, 1984). The scale consists of five subscales: Negative Mood, Interpersonal Problems, Ineffectiveness, Ahedonia, and Negative Self-Esteem. Internal validity of this five-factor structure was confirmed by factor analyses conducted with depressed and normative samples, which showed alpha coefficients for the subscales ranging from .59 to .68 (CDI; Kovacs, 1992). Overall, the CDI is a reliable measure of distress and depressive symptomatology (Curry & Craighead, 1993).

The Dominic (Valla, Bergeron, Berube, Gaudet, & St-Georges, 1994; Valla, Bergeron, St-Georges, & Gaudet, 1996) is a picture-based measure designed to assess emotional and behavioral symptoms; this cartoon measure is intended for both clinical and epidemiologic purposes. Items for the original Dominic were developed from *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev. [*DSM–III–R*]; American Psychiatric Association, 1980) criteria and therefore were designed to assess psychiatric symptomatology; the revision of the Dominic has updated items to *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM–IV*]; American Psychiatric Association, 1994) criteria, but more importantly, general items and normal behavior items have been included. The Dominic items depict a boy or girl named Dominic in different situations. Children are shown a cartoon and asked whether and how often they feel like the child in the picture (*one time*, *a few times*, *lots of times*.) Test–retest reliability for internalizing symptom scales ranged from .59 to .84 for 6-year-olds and from .66 to .94 for 11-year-olds (kappas are reported for each age by Valla et al., 1996). Cronbach's alphas measuring internal consistency for internalizing symptom scales ranged from .67 to .83. To reduce participant burden and minimize overlap in content with other measures in the assessment battery, only selected internalizing symptom items were administered. Seven depression and seven anxiety items were used based on their higher test–retest reliabilities when used with very young children in the National Institute of Mental Health Use, Needs, Outcomes, and Costs for Child and Adolescent Populations national pilot study (over a 1-week interval, range from .44 to .73). The items administered to measure anxiety were Items 1 through 3 and 9 through 12 of the scale. Items 4 through 8, 13, and 14 were administered to measure depression. Alphas calculated on the data collected on this sample were only moderate (.69 for anxiety; .67 for depression).

Anxiety. As noted previously, selected anxiety items from the Dominic scale were administered to the children (Valla et al., 1994, 1996). Symptoms of anxiety also were assessed using the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978, 1985). The RCMAS is one of the most widely used and researched self-report anxiety instruments for children age 6 to 19. Over 100 studies were conducted on the original scale (Castaneda, McCandless, & Palermo, 1956). The scale consists of 37 items and has been shown to have adequate construct, concurrent, content, and predictive validity. The 10-item Physiological Anxiety and 11-item Worry/Oversensitivity subscales of this measure were administered to the children. These scales were selected from the entire measure to reduce subject burden, because other instruments in the assessment battery assessed constructs covered in the Social Concerns and Concentration subscale. Coefficient alpha reliability estimates of .67 and .76 for the Physiological Anxiety and Worry/Oversensitivity subscales, respectively, have been reported (Reynolds & Richmond, 1985).

Results

Because the same method of data collection was used for these assessment measures (computer-assisted personal interview), a multitrait–monomethod approach to validation was undertaken (Cole, 1987). This approach allows for multiple traits to be evaluated for overlap given that the data were collected in the same fashion. Because the goal was to explore whether depression and anxiety were similar or independent, this

technique allows for the testing of single or multiple latent construct models. It may be considered a hybrid of the multitrait–multimethod approach described by Campbell and Fiske (1959; Cole, 1987), and focuses on construct validity.

Structural equation modeling (Bentler, 1995; Jorgeskog & Sorbom, 1989) was used to test the latent models, as recommended by a number of researchers to validate proposed latent factors (Bollen & Lennox, 1991; Cole, 1987). Four latent factor models were assessed for validity. Model 1 was designed to assess a dual-construct model assuming that depression and anxiety are unrelated. Model 2 also tested the dual-construct model but allowed for depression and anxiety to correlate. Model 3 tested a single construct model and assumed that depression and anxiety reflect the same construct (general affective distress). A fourth model was also tested, using a second-order or higher order analysis (Gorsuch, 1983) to test that depression and anxiety are primary constructs under the higher order factor general affective distress, and hence is equivalent to Model 2 (Breckler, 1990). Means and standard deviations based on raw scores for subscales for the CDI, RCMAS, and Dominic are presented in Table 2. Table 3 contains the interscale correlations, variances, and covariances. Covariances were used for the structural equation modeling analyses (Curdeck, 1989). All variables met multivariate assumptions for analysis (Tabachnick & Fidell, 1996). The correlations shown in Table 3 in the upper diagonal show that, with the exception of the Interpersonal Problems and Ineffectiveness subscales, the CDI subscales were intercorrelated at the .01 level, as were the RCMAS subscales and the Dominic subscales. In general, the CDI, RCMAS, and Dominic subscales were correlated with each other, with the exception of the CDI Interpersonal Problems and the Dominic anxiety subscales.

We ran structural equation modeling by using a maximum likelihood solution to investigate a dual-construct model on the child sample (Model 1). Subsequent models were run allowing for the latent constructs to correlate (Model 2), forcing a single-construct solution (Model 3), and creating a higher order factor structure with depression and anxiety as primary factors and negative affectivity as a second-order factor. The EQS program (Bentler, 1995) was used assuming independent constructs. Latent variable variances were set at 1.0, and error variances were allowed to vary (but were not allowed to correlate).

Table 2. Means and Standard Deviations for Children on the CDI, Dominic, and RCMAS

Scale	*M*	*SD*
CDI		
Negative Mood	2.53	2.40
Interpersonal Problems	1.40	1.60
Ineffectiveness	1.20	1.39
Anhedonia	3.45	3.04
Negative Self-Esteem	1.41	1.74
Dominic		
Anxiety	16.48	4.79
Depression	9.94	3.68
RCMAS		
Physiological Anxiety	4.24	2.11
Worry/Oversensitivity	5.63	2.89

Note: CDI = Children's Depression Inventory; RCMAS = Revised Children's Manifest Anxiety Scale.

We evaluated model fit by using multiple fit indexes, including chi-square/degrees of freedom ratio, the comparative fit index (CFI), the standardized root mean squared residual (SRMR), the root mean squared error of approximation (RMSEA), the Akaike information criterion (AIC), and the consistent Akaike information criterion (CAIC). The CFI, SRMR, and the RMSEA were chosen because of their robustness to small sample sizes and model misspecification (Hu & Bentler, 1998), and the AIC and CAIC were chosen to assess model parsimony.

Lower chi-square/degrees of freedom ratio (i.e., 2:1) indicate better model fit (Ullman, 1996). For the CFI, values range from 0 to 1, with higher values indicating better model fit. For the SRMR, values less than .08 indicate good model fit (Hu & Bentler, 1998), and for the RMSEA, values less than .05 indicate good model fit, .05 to .08 indicate fair fit, and values above .10 indicate poor fit (Browne & Cudeck, 1993). For the model AIC and CAIC, smaller values are superior (Ullman, 1996).

Results for Model 1 (uncorrelated dual-construct) show that the data did not fit the model well. The chi-square/degrees of freedom ratio was 3.16, χ^2 = 85.45(27, N = 86), $p < .001$; the CFI was .78; the SRMR was .21; and the RMSEA was .16. The model AIC was 31.44, and the CAIC was –61.82. The standardized item parameter estimates are presented in Table 4. All estimates were significant at the .01 level. Generally, higher parameter estimates indicate greater association with the assigned construct. For example, Negative Mood and Anhedonia show higher levels of association with the depression construct than the other indicators.

For Model 2, the depression and anxiety constructs were allowed to correlate (see Table 4 for standardized parameter estimates). Data for this model show adequate fit. The chi-square/degrees of freedom ratio was 2.22, χ^2 = 57.72(26, N = 86), $p < .001$; the CFI was .88; the SRMR was .08; and the RMSEA was .12. The model AIC was 5.72, and the CAIC was –84.09. The correlation between the two constructs was significant at the .001 level (r = .68), indicating a higher level of overlap between the depression and anxiety measures. All estimates were significant at the .01 level.

For Model 3, a single construct model was pursued that suggests that depression and anxiety are part of the same overall construct (i.e., negative affectivity). All

Table 3. Correlations, Variances, and Covariances Between CDI, Dominic, and RCMAS Subscales for Children

Scale	1	2	3	4	5	6	7	8	9
CDI									
1. Negative Mood	5.76	0.53***	0.34**	0.64***	0.56***	0.35***	0.44***	0.42***	0.41***
2. Interpersonal Problems	2.06	2.57	0.24*	0.45***	0.50***	0.06	0.30**	0.32**	0.21
3. Ineffectiveness	1.14	0.53	1.93	0.38***	0.35**	0.14	0.22	0.27**	0.19
4. Anhedonia	4.68	2.20	1.58	9.22	0.61***	0.15	0.47***	0.33**	0.37***
5. Negative Self-Esteem	2.34	1.39	0.84	3.20	3.02	0.21	0.45***	0.30**	0.36***
Dominic									
6. Anxiety	4.08	0.44	0.93	2.11	1.72	22.98	0.57***	0.35***	0.40***
7. Depression	3.89	1.75	1.11	5.27	2.89	10.08	13.56	0.51***	0.33**
RCMAS									
8. Physiological Anxiety	2.14	1.08	0.80	2.12	1.11	3.58	3.40	4.45	0.54***
9. Worry/Oversensitivity	2.82	0.95	0.78	3.24	1.82	5.49	3.53	3.28	8.33

Note: CDI = Children's Depression Inventory; RCMAS = Revised Children's Manifest Anxiety Scale. Correlations are in the upper right diagonal, variances are on the diagonal and covariances are in the lower left diagonal.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4. Parameter Estimates for Orthogonal, Correlated, and Single Constraint Models (Models 1, 2, and 3), and Model Fit Indexes

	Model 1		Model 2		Model 3
Scale	Depression	Anxiety	Depression	Anxiety	Negative Attention Distress
Children's Depression Inventory					
Negative Mood	0.79		0.80		0.80
Interpersonal Problems	0.62		0.60		0.57
Ineffectiveness	0.44		0.44		0.44
Anhedonia	0.80		0.79		0.76
Negative Self-Esteem	0.75		0.74		0.72
Dominic					
Anxiety		.51		.51	0.41
Depression	0.57		0.60		0.64
Revised Children's Manifest Anxiety Scale					
Physiological Anxiety		.69		.73	0.57
Worry/Oversensitivity		.78		.73	0.54
Fit Indexes					
χ^2:*df*	3.16		2.22		2.83
CFI	0.78		0.88		0.81
SRMR	0.21		0.08		0.09
RMSEA	0.16		0.12		0.15
AIC	31.44		5.72		22.30
CAIC	–61.82		–84.09		–70.97

Note: CFI = comparative fit index; SRMR = standardized root mean squared residual; RMSEA = root mean squared error of approximation; AIC = Akaike information criterion; CAIC = consistent Akaike information criterion.

predictive scales were forced to load on the single latent construct. Data for this model show less than adequate fit. The chi-square/degrees of freedom ratio was 2.83, $\chi^2 = 76.30(27, N = 86)$, $p < .001$; the CFI was .81; the SRMR was .09; and the RMSEA was .15. The model AIC was 22.3, and the CAIC was –70.97. All estimates were significant at the .01 level (see Table 4).

Models 1 and 3 can be compared statistically to Model 2 because the models were nested (i.e., Models 1 and 3 may be derived directly from Model 2 by releasing constraints or adding parameters; Loehlin, 1987). Because we tested all models by using maximum-likelihood estimation, the chi-square and degrees of freedom values may be subtracted from one another, with the resulting chi-square and degree of freedom tested for significance. Results of the model comparisons show that Model 2 fits the data better than Model 1, $\chi^2_{dif} = 27.73(1, N = 86)$, $p < .01$, suggesting the correlated model is superior to the orthogonal model. Model 2 also fits the data better than Model 3, $\chi^2_{dif} = 18.58(1, N = 86)$, $p < .01$, suggesting that the correlated model is superior to the single construct model.

When constructs are shown to be highly correlated, they actually reflect the presence of a second-order or higher order factor (Gorsuch, 1983). We tested the presence of negative affectivity as a higher order con-

struct by using structural equation modeling with a maximum-likelihood solution (for examples of second-order analyses and structural equation modeling, see Bentler, 1995; see also Marsh & Hocevar, 1988; Rindskopf & Rose, 1988). The EQS program (Bentler, 1995) was used assuming depression and anxiety are orthogonal (as in Model 1). However, the latent construct negative affectivity was added as a higher order factor, with direct paths from negative affectivity to the primary factors of anxiety and depression. Because of the addition of a higher order construct, anxiety and depression each now had a disturbance term (i.e., residual of the latent variable), which was estimated with a starting value of 1.0. Variance for negative affectivity was set at 1.0. Parameter estimates from negative affectivity to anxiety and depression were allowed to vary (with a starting value of 1.0) but were constrained to be equal with each other, therefore allowing for the second-order model to estimate the same number of parameters as estimated for Model 2 (hence, an equivalent or alternative model; Breckler, 1990; Jorgeskog & Sorbom, 1989). Error variances for all measured variables were allowed to vary. We evaluated model fit by using the multiple fit indexes noted in prior analyses.

Results for the analysis show that fit of the second-order model was identical to the correlated construct model (Model 2), indicating that the higher order model is an equivalent or equally consistent alternative to Model 2. The standardized parameter estimate (i.e., path) from negative affectivity to anxiety was .78 ($p < .01$) and from negative affectivity to depression was .86 ($p < .01$). All parameter estimates were significant at the .01 level and are identical to Model 2 values noted in Table 4 except for CDI Negative Mood and RCMAS Worry, which were set for identification purposes. The standardized estimate of the disturbance term for anxiety was .62 and for depression was .51.

Discussion

The objective of this investigation was to examine the relation between anxiety and depression in young children. For this sample, we found that anxiety and depression as assessed by the measures used in this study had unique components but had overlap (Model 2). This overlap was subsequently remodeled into a higher order component of negative affectivity, thus forming a model equivalent to Model 2 yet leading to more parsimonious interpretation (Gorsuch, 1983). The uncorrelated dual-construct model (Model 1) was not a good fit, nor was the single-construct model which suggests that anxiety and depression are part of the same overall construct (Model 3). Overall, these findings indicate that even among young children there is a distinction between anxiety and depression, with a large common component that could be labeled negative affectivity.

The findings of this study are consistent with some previous findings in the child and adult literature. Among the young children in this sample, anxiety and depression shared a nonspecific component of what might be termed *general affective distress* or *negative affectivity*, but the constructs were also distinguished from each other, similar to the tripartite view first developed in the adult literature. As L. A. Clark and Watson (1991) noted, it may be that elevated levels of the nonspecific component will always be evident and that the correlations between anxiety and depression symptoms may reflect the fact that the two constructs share many distress symptoms rather than indicating a total syndrome overlap.

There are limitations to this study. First, the results are based entirely on self-report measures of anxiety and depression. Second, the measures used to assess the two constructs do not provide a comprehensive assessment of all anxiety and depressive symptoms. Another limitation to the study regards the fit of the study models to the observed data. None of the models tested reached the optimum fit criteria. Even the best model (Model 2 or its equivalent higher order representation) did not meet the optimum criteria for the chi-square/degrees of freedom ratio, CFI, SRMR, or the RMSEA. It is possible that an alternative, superior fitting model may exist yet was never tested. However, as Breckler (1990) suggested, significance of individual parameter estimates also are of "critical importance" when assessing model fit in addition to global fit measures. Although our best model did not meet optimum global fit criteria, all parameter estimates were reliably different from zero.

In summary, this study provides preliminary evidence that anxiety and depression have unique components even among young children, with the association between the two constructs supporting the idea of a negative affectivity construct, or nonspecific component, in children (Crowley & Emerson, 1996; Finch et al., 1989; Lonigan et al., 1999; Seligman & Ollendick, 1998; Wolfe et al., 1987). Our findings are consistent with other studies that have used clinical or normal samples (e.g., Crowley & Emerson, 1996; Lerner et al., 1999; Stavrakaki et al., 1987). Moreover, this study indicates that such findings may be generalizable to some extent across mood, symptom, and syndromal levels because the same results have now been reported for clinical, "in-between," and normal community samples. Although replication of these findings across different populations of young children is needed, with more extensive measures of anxiety and depression, it appears that investigators assessing these constructs in children should adapt the suggestion made by Foa and Foa (1982) some time ago when discussing the overlap of anxiety and depression in adults—to define these

constructs as independently as possible, excluding items that are common to the two syndromes, to obtain a clearer conceptualization of the two constructs.

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