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PSYCHOSOCIAL OUTCOMES OF ANXIOUS FIRST GRADERS: A SEVEN-YEAR FOLLOW-UP

Rachel L. Grover, Ph.D.^{1,*}, Golda S. Ginsburg, Ph.D.², and Nick Ialongo, Ph.D.³

¹Department of Psychology, Loyola College in Maryland, Baltimore, Maryland ²Department of Psychology and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, Maryland ³Department of Mental Hygiene, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

Abstract

This study examined the concurrent and long-term psychosocial outcomes associated with anxiety symptoms among a community sample of predominately low-income African Americans (N = 149; 72 females). We classified first graders as high or low anxious using child, parent, and teacher reports. Academic, social, and psychological outcomes were assessed in the first and eighth grades. Logistic regressions with concurrent data revealed that highly anxious children were significantly more likely to score lower on measures of academic achievement and peer acceptance, but higher on measures of depression and aggression compared to their low-anxious peers. Longitudinal analyses revealed that high-anxious first graders, compared to their low-anxious peers, scored significantly lower on measures of academic achievement, aggression, and peer acceptance; and higher on measures of anxiety and depression in the eighth grade. Importantly, outcomes varied depending on informant. Findings suggest that, similar to European American youth, early-onset anxious symptoms in African American children are associated with both concurrent and long-term academic, social, and psychological difficulties.

Keywords

child anxiety; child psychopathology; African American

INTRODUCTION

Anxiety disorders in children are highly prevalent and associated with significant concurrent impairment in academic, social, and psychological domains of functioning [for a review, see Silverman and Ginsburg, 1998]. Findings from related areas of research, including data on behavioral inhibition [Beiderman et al., 1995], childhood shyness [Beidel and Turner, 1999; Schmidt and Fox, 1998], and children with subclinical levels of fear and anxiety [Vasey and Dadds, 2001], suggest that early symptoms of anxiety elevate the risk of later anxiety disorders. Less clear, however, is whether early symptoms of anxiety are associated with long-term impairments in additional domains of functioning such as academic or social, and whether early anxious symptoms also represent a risk factor for later depression or externalizing psychopathology.

*Correspondence to: Rachel L. Grover, Ph.D., Loyola College in Maryland, Department of Psychology, 4501 N. Charles Street, Baltimore, MD 21287-3325. rlgrover@loyola.edu.

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Data from studies using concurrent designs have revealed that children with elevated levels of anxiety symptoms appear to be at risk for deficits in several domains of functioning [e.g., Ialongo et al., 1996; Rubin et al., 1993]. In the academic domain, anxiety symptoms have been associated with test anxiety, reluctance to speak up in the classroom, and poor academic performance [Asendorpf and Meier, 1993; Beidel et al., 1999; Ialongo et al., 1996]. In the social realm, anxious youth tend to be isolated, to have limited or maladaptive peer relationships, and may be at risk for social withdrawal [Rubin et al., 1993; Schmidt and Fox, 1998]. Moreover, anxiety symptoms have been associated with self-perceptions of low social acceptance and impaired friendship quality within “best friend” dyads [Fordham and Stevenson-Hinde, 1999]. In the psychological domain, research has indicated that anxiety and depression can co-occur [Kashani and Orvaschel, 1990; Last et al., 1990]. Overlap between anxiety disorders and externalizing disorders (most likely due to the refusal of the child to engage in feared situations) is less common but has also been documented [Angold et al., 1999].

The relatively small longitudinal literature suggests that subclinical levels of anxiety or shyness may negatively affect long-term functioning. Early and stable behavioral inhibition, or the predisposition to exhibit fear and withdrawal in response to novel situations, has been linked to increased risk of later anxiety problems both in childhood and in adolescence [Beiderman et al., 1995; Prior et al., 2000]. For instance, Prior and colleagues followed 2,443 infants to early adolescence (13 to 14 years). Youth were classified as “shy” or “not shy” depending on maternal ratings on several measures of inhibited behavior at eight assessment time points. Ratings of shyness proved to be highly stable over time, and youth consistently rated as highly inhibited over multiple assessment points exhibited significantly more anxiety disorders than less persistently shy youth. In one of the longest follow-up studies in this area, Caspi et al. [1988] followed youth ($n = 182$) from birth to adulthood (40 years). Although no measures of psychopathology were included in the study, Caspi et al. documented several adjustment indices impacted by childhood shyness. Males rated as shy when children exhibited later age of marriage, lower occupational achievement, and less employment stability, whereas shy females evidenced a reduced likelihood of attending college compared to those not rated as shy.

Taken together, literature is accumulating to suggest that early symptoms of anxiety in children may be predictive of troubling concurrent psychological, social, and academic outcomes. However, additional research is needed to investigate additional outcomes and to extend the longitudinal research. Specifically, it is unclear whether early anxiety represents a concurrent and/or long-term risk factor for multiple psychopathologies (e.g., other internalizing disorders, externalizing disorders) or is a specific predictor for anxiety-related symptoms and/or disorders. Also, most of the existing studies, both concurrent and longitudinal, have focused on a single outcome (e.g., anxiety disorders) rather than multiple areas of functioning. Finally, few studies have assessed the relation between early anxiety symptoms and concurrent and later functioning among minority youth. Thus, findings from the extant literature may not generalize to racial minorities.

To address some of these identified gaps in the literature, Ialongo et al. [1995] followed a predominantly African American group of children from first to fifth grade to investigate the relation between early anxiety symptoms and later anxiety and academic functioning. They documented that self-reported anxious symptoms in first grade significantly predicted anxious symptoms in fifth grade. In addition to continued difficulties with anxiety, those children who scored in the top one-third on a measure of anxious symptoms in first grade were also significantly more likely than less anxious children to obtain low achievement scores in fifth grade. Despite the many strengths of this study (e.g., longitudinal design,

racial minority sample), the investigation was limited by its sole focus on only two domains of functioning (i.e., anxious symptoms and academic performance).

Our aim in this study was to replicate and extend the Ialongo et al. [1995] study by examining the concurrent and long-term association between anxious symptoms and academic, social, and psychological functioning (measured in first and eighth grades) among a community sample of high-risk, predominantly African American children. Ialongo and colleagues at the Baltimore Prevention and Research Center (BPRC; Johns Hopkins University Bloomberg School of Public Health) enrolled a new cohort of children in 1993, when the children began first grade. We used multiple informants (i.e., self, parent, and teacher) to assess both anxiety symptoms and psychosocial outcomes. By assessing psychosocial functioning in early adolescence we hoped to capture emerging problems, because this developmental period represents a stage of increased risk for the onset of academic and psychosocial difficulties [Essau et al., 1999]. Moreover, because African Americans have a long-standing history of being subjected to social inequality and discrimination, their perceptions of uncontrollability are likely to be elevated. A lack of perceived control has been linked to learned helplessness and may increase the risk of psychosocial difficulties in this sample [Chorpita, 2001]. Similarly, living in lower socioeconomic status communities, often characterized by poverty, crime, and violence, may also increase psychosocial difficulties among these youth [Aneshensel and Sucoff, 1996; Tiet et al., 2001].

Based on the existing literature reviewed earlier, we hypothesized that (1) anxious symptoms in the first grade would be negatively associated with social acceptance and academic functioning, both concurrently and at 7-year follow-up, and (2) first graders' symptoms of anxiety would be positively associated with first-grade reports of depression and eighth-grade symptoms of both anxiety and depression. Finally, because it is possible that early anxious symptoms represent a risk for psychopathology in general, rather than internalizing symptoms specifically, the association between anxious symptoms in the first grade and externalizing behaviors in the first and eighth grades was also examined. Based on previous literature that suggests anxious symptoms in childhood may be related to avoidance-related behavioral problems, we also hypothesized that early anxious symptoms would be positively associated with first and eighth grade externalizing symptoms.

MATERIALS AND METHODS

PARTICIPANTS

Participants included 149 first-grade children (72 females), ranging in age from 5 to 8 ($M = 5.97$, $SD = 0.47$) and a parent or guardian (77% biological mother, 10% biological father, 10% female guardian, 3% male guardian). The racial makeup of the sample was 87.9% African American and 12.1% European American. The majority of participants (70.7%) qualified for the free or reduced-fee lunch program, indicating a relatively low socioeconomic status sample. Both the racial makeup and the income level are typical of Baltimore City public elementary schools. The 149 participants constituted a subsample of a larger study of 678 children and families, representative of the entering first graders in nine Baltimore City public elementary schools. From this original sample, 175 were selected using a stratified random sampling procedure to participate in an intensive study that included additional assessments. Of these 175, 149 agreed to participate [for a more detailed description of the original sample, see Ialongo et al., 1999].¹ Over the longitudinal course of the study, some data were lost to attrition. At the eighth-grade follow-up, two families were

¹Treatment group membership had no effect on the outcome variables assessed in this study.

lost to attrition (parent- and child-report data), and 122 parents and 129 children completed measures of academic, social, familial, and psychological functioning. Because child and parent assessments took place at separate sites (school vs. BPRC), it was possible occasionally to obtain data from one reporter but not the other. Participants missing data in eighth grade did not differ on income, race, or child or adult reports of functioning from the participants who completed the eighth-grade assessment. However, children missing data at eighth grade were significantly more likely to be male [$\chi^2(1) = 5.18, P < .05$].

IDENTIFICATION OF ANXIOUS CHILDREN

We identified three groups of children as high or low anxious utilizing one of three measures administered in the first grade: one child self-report, one parent report, and one teacher report. Children who obtained scores within the top one-third of each measure were considered anxious.

Child report—Anxiety symptoms were assessed by a youth self-report version of the Baltimore How I Feel—Young Child Version, Child Report [BHIF-YC-C, Ialongo and Kellam, 2002, unpublished manuscript] in the first grade. The BHIF-YC-C is an early elementary school, child self-report scale of anxious and depressive symptoms. Children reported the frequency of symptoms over the last 2 weeks on a 3-point scale (0 = *Never*, 1 = *Sometimes*, 2 = *Almost always*). The BHIF questionnaires [Young Child Version, Child Report (YC-C); Young Child Version, Parent Report (YC-P); and Adolescent Version, Youth Report (AY)] were designed for use as first-stage measures in two-stage epidemiological investigations of the prevalence of child mood and anxiety disorders as defined in DSM-III-R [American Psychiatric Association, 1987]. Accordingly, the 30-items on the scale map onto DSM-III-R criteria for major depressive, overanxious, and separation anxiety disorders. In the creation of the BHIF measures, a pool of items was also drawn from existing child self-report measures, including the Children's Depression Inventory [Kovacs, 1992] and the Children's Manifest Anxiety Scale—Revised [Reynolds and Richmond, 1985]. Previously, internal consistency in the first grade was computed at .64 for the BHIF-YC-C Anxiety subscale and .70 for the BHIF-YC-C Depression subscale [Ialongo and Kellam, 2002, unpublished manuscript]. In terms of concurrent validity, for each standard deviation increase in BHIF-YC-C Depression or Anxiety subscale scores in first grade, there was a statistically significant increase in the likelihood of the child's parent reporting that the child was in need of mental health services for "feeling sad, worried or upset" [Ialongo and Kellam, 2002, unpublished manuscript].

Parent report—The BHIF-YC-P [Ialongo and Kellam, 2002, unpublished manuscript] is the parent version of the child self-report form of the BHIF-YC-C described earlier. The 30 items are the same in both, but the person is changed from "you" to "he/she". Among first graders, the internal consistency for the BHIF-YC-P was .72 for the Anxiety subscale and .80 for the Depression subscale [Ialongo and Kellam, 2002, unpublished manuscript]. With respect to predictive validity, for each standard deviation increase in BHIF-YC-P Depression subscale scores in first grade, there was a statistically significant increase in the likelihood that the child met DSM-IV criteria for a major depressive disorder (MDD) episode in ninth grade based on parent report on the Computerized Diagnostic Interview Schedule for Children, Version IV [C-DISC-IV; Shaffer et al., 2000]. Similarly, first-grade BHIF-YC-P Anxiety subscale scores significantly predicted diagnosis of generalized anxiety disorder (GAD) in ninth grade based on parent report on the C-DISC-IV [Ialongo and Kellam, 2002, unpublished manuscript].

Teacher report—We assessed the teacher report using the Shy Behavior subscale (eight items) from the Teacher Observation of Classroom Adaptation—Revised [TOCA-R;

Werthamer-Larsson et al., 1991], a structured interview conducted with teachers that assesses a child's performance on six basic tasks (e.g., accepting authority, social participation, self-regulation). Training of lay interviewers included practice assessments observed by the supervisory staff and weekly supervision sessions that featured review of appropriate assessment administration procedures and discussions of problems encountered administering the measures. Interviewers were predominately African American young adults and about 70% were females. Teachers were asked to rate the frequency of eight behaviors indicative of shy behavior in the classroom (e.g., initiates social interaction, avoids classmates, has lots of friends) on a 6-item Likert-type scale (ranging from 1 = *Never* to 6 = *Always*). The coefficient α for the TOCA-R Shy Behavior subscale in elementary school was .83 and 1-year test-retest reliability was .35 [Second-Generation JHU (Johns Hopkins University) Prevention Intervention Research Center's Intervention Trial, 2003]. Regarding evidence for convergent validity, high ratings on the Shy Behavior subscale were associated with fewer positive peer nominations [Ialongo et al., 1994]. Higher scores indicate higher levels of shy behavior.

MEASURES OF ACADEMIC FUNCTIONING

First grade—The fourth edition of the Comprehensive Test of Basic Skills [CTBS; 1990] is one of the most frequently used standardized achievement batteries in the United States. Subtests assess both verbal (word analysis, visual recognition, vocabulary, comprehension, spelling, and language mechanics and expression) and quantitative topics (computation, concepts, and applications). The CTBS was standardized on a nationally representative sample of 323,000 children from kindergarten through grade 12. Reading and Math scores were utilized for this study. According to a McGraw-Hill [2001] technical report, coefficient α for the fourth edition Reading scales range from .86 to .92 and for the Math scales, from .83 to .90. The fourth edition of the CTBS obtained adequate convergent validity with other common tests of achievement [Li and Tompkins, 2004].

Eighth grade—Due to school policy, eighth graders completed the Kaufman Test of Educational Achievement [K-TEA; Kaufman and Kaufman, 1998], an achievement test designed to measure global functioning in reading, mathematics, and spelling. Normed on a representative sampling of over 3,000 school-age children, the K-TEA generates grade-based standard scores ($M = 100$, $SD = 15$), percentile ranks, and normal curve equivalents. In this study, we examined results from the Reading (from the K-TEA Brief Form) and the Mathematics Computation (from the K-TEA Comprehensive Form) tests. Previous studies support the convergent validity of the two subscales, because the Reading and Mathematics subtests are positively correlated with widely used intelligence tests [Lavin, 1996; Prewett and McCaffery, 1993].

MEASURES OF SOCIAL FUNCTIONING

First grade—Social functioning in first grade was assessed by a measure from each of the three available informants (child, parent, and teacher). The Self-Perception Profile for Children [SPPC; Harter, 1985] was used to assess child self-report of peer acceptance. Children were asked to choose between two statements, then indicate whether the chosen statement was *Sort of true* or *Really true* of his or her experience. The Social Acceptance subscale comprises six items, and original estimates of internal consistency were above .75 [Harter, 1985]. Higher scores indicate greater peer acceptance.

The Parent Observation of Child Adaptation [POCA; Werthamer-Larsson et al., 1991] was used to gather parent reports of social functioning in first grade. The POCA is a parent-report structured interview that assesses a broad range of child behaviors (e.g., shy behaviors, peer acceptance, externalizing behaviors). Trained interviewers asked parents to

rate their children on three items indicating social functioning (e.g., frequency with which the child is rejected). The frequency of each social behavior was rated on a 4-point Likert-type scale (ranging from 1 = *Never* to 4 = *Always*). Internal consistency for the POCA Likability subscale is acceptable at .78 [Second-Generation JHU PIRC Intervention Trial, 2003]. Regarding validity, past studies have documented convergence with TOCA-R Likability ratings, as well as peer nominations [Second-Generation JHU PIRC Intervention Trial, 2003]. Higher scores represent lower peer acceptance. Teacher report of social functioning was obtained by using the TOCA-R Likability subscale. Teachers were asked to rate the frequency of three behaviors indicative of peer acceptance in the classroom (e.g., children seek him/her out to play) on a 6-point Likert-type scale (ranging from 1 = *Never* to 6 = *Always*). Internal consistency for the TOCA-R Likability subscale is within acceptable bounds [.80 and higher; Second-Generation JHU PIRC Intervention Trial, 2003]. Higher scores represent lower peer acceptance.

Eighth grade—Child report of social functioning in eighth grade was assessed by the Social Acceptance subtest of the Self-Perception Profiles for Adolescents [SPPA; Harter, 1988]. Participants were asked to choose between two statements, then indicate whether the chosen statement is *Sort of true* or *Really true* of his or her experience. Internal consistency of the SPPA is acceptable (.74 to .93 across the subscales), and the validity of the Youth Self-Report version of the SPPA is supported by findings that link scores to perceived control, mastery motivation, academic achievement, and depression [Harter, 1988]. Higher scores indicate greater perceived peer acceptance. Similar to the first grade assessment, the POCA and TOCA-R Likability subscales were used to gather parent and teacher reports of social functioning in eighth grade [Werthamer-Larsson et al., 1991].

MEASURES OF PSYCHOLOGICAL FUNCTIONING

First grade—Child and parent reports of depression were assessed with the previously described BHIF-YC-C and BHIF-YC-P. The POCA was used to assess parent report of externalizing symptoms in first grade [Werthamer-Larsson et al., 1991]. Trained interviewers asked parents to rate their children on seven items indicating aggressive behavior (e.g., breaks rules, hurts others, damages property, teases other children). Each aggressive behavior was rated on a 4-point Likert-type scale (ranging from 1 = *Never* to 4 = *Always*). Previous psychometric analyses indicate adequate internal consistency for the POCA Aggression subscale at .79 [Second-Generation JHU PIRC Intervention Trial, 2003]. Vaden-Kiernan et al. [1995] obtained significant correlations among the POCA Aggression subscale scores and concurrent reports of disciplinary removals and suspensions in the sixth grade. Higher scores reflect higher frequency of aggressive behaviors. Similarly, the TOCA-R Aggressive Disruptive Behavior subscale was used to assess teacher reports of externalizing symptoms in first grade [Werthamer-Larsson et al., 1991]. Trained interviewers asked teachers to rate their children on 14 items indicating aggressive or disruptive behavior (e.g., breaks rules, hurts others, damages property, teases other children). Each aggressive behavior was rated on a 6-point Likert-type scale (ranging from 1 = *Never* to 6 = *Always*). Internal consistency for the TOCA-R Aggressive Disruptive Behavior subscale is within acceptable bounds [.80 and higher; Second-Generation JHU PIRC Intervention Trial, 2003]. Higher scores reflect higher frequency of aggressive behaviors.

Eighth grade—Child-report symptoms of anxiety and depression were assessed by the BHIF-AY [Ialongo and Kellam, 2002, unpublished manuscript] in eighth grade. The BHIF-AY is a 45-item, youth self-report scale of depressive and anxious symptoms. Children report the frequency of depressive and anxious symptoms over the last 2 weeks on a 4-point scale, from *Never* (0) to *Most times* (3). The internal consistency for the BHIF-AY

Depression and Anxiety subscales ranged between .79 and .88 through the middle school years [Ialongo and Kellam, 2002, unpublished manuscript]. In terms of concurrent validity, youth self-reports on the BHIF-AY Depression subscale in middle school were significantly associated with a diagnosis of major depressive disorder on the C-DISC-IV [Ialongo and Kellam, 2002, unpublished manuscript; Shaffer et al., 2000], whereas middle school BHIF-AY Anxiety subscale scores were significantly associated with a diagnosis of GAD on the C-DISC-IV [Ialongo and Kellam, 2002, unpublished manuscript]. For both subscale scores, higher values indicate more internalizing symptoms.

Parents reported on the presence of symptoms of GAD (e.g., restless when worried, tires easily, muscles tight, trouble sleeping), major depressive disorder (e.g., irritable, sad, walking/talking slower than usual), and conduct disorder (e.g., skips school, frequently lies, breaking into a building or car) using the relevant portions of the C-DISC-IV [Shaffer et al., 2000]. We used an overall symptom count for our analyses, with higher scores representing greater pathology. Teacher reports of both internalizing and externalizing symptoms were assessed using the Shy Behavior and Aggressive Disruptive Behavior subscales of the TOCA-R [Werthamer-Larsson et al., 1991]. Teachers were asked to rate the frequency of three behaviors indicative of social behavior (e.g., avoids classmates, initiates appropriate interactions) and four behaviors indicative of oppositional behavior (e.g., disobeyed teachers and other adults, talked back to teachers and other adults) on a 6-point Likert-type scale (ranging from 1 = *Never* to 6 = *Always*). Internal consistency on both scales is within acceptable range [.80 and higher; Second-Generation JHU PIRC Intervention Trial, 2003]. Higher scores indicate more frequent shy behaviors and oppositional behaviors.

PROCEDURE

Informed consent was obtained for all participants in accordance with the authors' Institutional Review Board. First-grade assessment measures were administered in the school (i.e., CTBS, TOCA) or at the Baltimore Prevention and Research Center (i.e., SPPC, POCA, BHIF-YC-C, and BHIF-YC-P). Eighth-grade assessment measures were administered in the classroom (K-TEA, SPPA, BHIF-AY, TOCA) or at the Baltimore Prevention and Research Center (POCA, portions of the C-DISC-IV).

DATA ANALYTIC STRATEGY

We used logistic regression analyses to examine the relation of first-grade anxious symptoms to academic, social, and psychological functioning at both first and eighth grade. All measures were converted to dichotomous variables based on a tertile division. The upper one-third, or 66th percentile, was used as the dividing point for the total score for the measures of internalizing and externalizing symptoms, as well as those measures in which higher scores represented greater peer rejection (i.e., POCA and TOCA Likability subscales). The lower third, or 33rd percentile, was used as the dividing point for the achievement scores and the social acceptance measures in which lower scores represent greater peer rejection (i.e., SPPC, SPPA). The decision to employ logistic regression analyses and to dichotomize variables was based on several factors. First, the distribution of several of the psychopathology variables was skewed, because the majority of children, teachers, and parents reported few symptoms of pathology. Logistic regression is a more appropriate way to analyze non-normal data than techniques based on the assumption of normality. Second, the normal range of most of the indices of later functioning is very wide. We were interested in investigating the degree that early anxious behaviors are related to the risk for serious academic, social, and psychological outcomes. The decision to utilize dichotomous variables, as well as the sample size, precluded the use of other longitudinal analytic techniques (e.g., path analysis).

RESULTS

We examined the relationship between child anxiety status and social, psychological, and academic functioning by using separate logistic regressions. Specifically, individual regressions were performed for each informant of anxiety status (child, parent, or teacher) and each outcome measure. For analyses on eighth-grade outcome variables, first-grade functioning on the same variable was entered as a covariate when a significant correlation between the two was found. For example, in predicting eighth-grade academic achievement, entered in the first step of the regression was first-grade academic achievement, followed by the first-grade measure of anxiety.

ACADEMIC FUNCTIONING

First grade—First-grade teacher-identified anxious youth were nearly three times more likely than nonanxious youth to score in the bottom one-third on standardized achievement tests of reading and mathematics [odds ratio (OR) = 2.82, 95% confidence interval (CI) = 1.33–5.96, $P < .01$; OR = 2.81, 95% CI = 1.36–5.85, $P < .01$, respectively; see Table 1]. Significant associations between first-grade anxiety and concurrent achievement were not observed for child- or parent-identified anxious youth.

Eighth grade—First-grade teacher-identified anxious youth were approximately three times more likely than non-anxious youth to be in the bottom one-third of reading achievement and over two times more likely than non-anxious youth to be in the bottom one-third of mathematics achievement (OR = 3.01, 95% CI = 1.29–6.99, $P < .05$; OR = 2.40, 95% CI = 1.03–5.58, $P < .05$, respectively; see Table 1). Significant associations between first-grade anxiety and eighth-grade achievement were not observed for child- or parent-identified anxious youth.

SOCIAL FUNCTIONING

First grade—First-grade teacher-identified anxious youth were nearly 12 times more likely than nonanxious youth to be rated by their teachers as low in social acceptance (OR = 11.90, 95% CI = 1.85–76.53, $P < .01$; see Table 2). No other significant associations between first-grade anxiety and concurrent measures of social acceptance were found.

Eighth grade—First-grade child-identified anxious youth were over three times more likely than nonanxious youth to be rated by their parents as low in social acceptance (OR = 3.17, 95% CI = 1.42–7.08, $P < .01$; see Table 2). No other significant associations between first-grade anxiety and eighth-grade measures of social acceptance were found.

PSYCHOLOGICAL FUNCTIONING

First grade—First-grade child-identified anxious youth were over five times more likely than nonanxious youth to rate themselves as highly depressed (OR = 5.57, 95% CI = 2.69–11.54, $P < .001$) and three times more likely than nonanxious youth to be identified as highly aggressive by their parents (OR = 3.89, 95% CI = 1.79–8.43, $P < .01$; see Table 3). First-grade parent-identified anxious youth were over six times more likely than nonanxious youth to be classified as highly depressed by parent report (OR = 6.62, 95% CI = 2.97–14.76, $P < .001$). First-grade teacher-identified anxious youth were over two times more likely than nonanxious youth to be classified as highly aggressive by parents and teachers (OR = 2.37, 95% CI = 1.1–5.11, $P < .05$; OR = 2.76, 95% CI = 1.34–5.68, $P < .01$, respectively).

Eighth grade—Child-identified anxious youth were twice as likely as nonanxious youth to rate themselves as highly anxious and were nearly six times more likely than nonanxious youth to be rated as highly anxious by their parents (OR = 2.24, 95% CI = 1.05–4.77, $P < .05$; OR = 5.84, 95% CI = 1.13–30.33, $P < .05$, respectively; see Table 3). First-grade child-identified anxious youth were three times more likely than nonanxious youth to rate themselves as highly depressed (OR = 3.64, 95% CI = 1.48–8.99, $P < .01$, respectively). No other significant relations were found between first-grade anxiety and symptoms of depression in the eighth grade. However, first-grade child-identified anxious youth were slightly less likely than nonanxious youth to be rated as highly aggressive by teachers (OR = 0.36, 95% CI = 0.15–0.85, $P < .05$). No other significant relations were found between first-grade anxiety and symptoms of aggression in the eighth grade.

DISCUSSION

This study examined the concurrent and long-term association between symptoms of anxiety and psychosocial functioning among a predominately low-income African American community-based sample. Findings suggest that early symptoms of anxiety affect concurrent and long-term academic, social, and psychological functioning. However, findings varied depending on the informant used to classify anxious children in first grade and to report psychosocial outcomes. The variation in findings based on informant highlights the value of collecting multiple perspectives in the assessment of anxiety. Specific findings and their implications are discussed below.

Highly anxious first graders exhibited significantly impaired concurrent academic functioning. This finding replicated previous concurrent examinations of the relation between anxious symptoms and academic functioning [Ialongo et al., 1994, 1996]. Although the causal direction is unclear, performing poorly in school is likely to raise children's anxiety levels, increase their fears of negative performance evaluations, and could lead to withdrawal from or avoidance of the school environment. Conversely, anxious symptoms may detrimentally affect school performance in several ways. Fearful or worrisome thoughts may affect concentration, impeding the absorption of new information. Indeed, Strauss et al. [1987] found that teachers rated children with elevated anxiety symptoms as being more inattentive and immature than their less anxious peers. In addition to increased difficulties with attention, anxious children have been found to speak less during classroom discussions, potentially preventing them from asking for and receiving needed help and/or limiting the potential benefits of group learning activities [Asendorpf and Meier, 1993]. Finally, heightened levels of anxiety symptoms have been found to be associated with elevated test anxiety that may interfere with the ability of children to perform on standardized tests [Beidel et al., 1999].

More troubling than the concurrent relation between anxious symptoms and academic functioning is the finding that first-grade anxious symptoms were associated with eighth-grade deficits in reading and mathematics achievement even after the effects of earlier academic performance was statistically controlled. For anxious children, early experiences with academic failure could foster a lack of self-efficacy and feelings of helplessness in school that persist into middle school. Alternatively, anxious children may be particularly sensitive to evaluative settings and consistently underperform relative to their peers on standardized tests. Indeed, both African American and European American youth with test anxiety tend to have higher rates of anxiety disorder diagnoses [Beidel et al., 1994]. Although the actual relation between school performance and anxious symptoms is likely to be complex and multidirectional, early anxious symptoms remain important predictors of later academic achievement.

With respect to social functioning, both teachers (in the first grade) and parents (in eighth grade) reported that anxious first graders were less likely to be sought out by other children and more likely to be socially rejected than their nonanxious peers. Several previous studies have found a link between anxious behavior and peer social status. For instance, Strauss and colleagues [1987] observed that highly anxious children (2nd through 5th graders) received significantly fewer “like most” and significantly more “like least” nominations than their nonanxious classmates. Shy or withdrawn children are often neglected or overlooked in peer social interactions [Rubin et al., 1993]. Further compounding their social isolation, anxious children may be aware of their peer status, withdraw, and fail to develop the appropriate social skills, thereby increasing their risk of negative social evaluation and rejection [Rubin and Mills, 1991].

In terms of psychological functioning, early symptoms of anxiety were significantly related to concurrent depression and later symptoms of anxiety and depression. The tendency for anxious and depressed symptoms to co-occur has been frequently documented [Brady and Kendall, 1992; Mineka et al., 1998; Verduin and Kendall, 2003]. Developmental psychopathologists, as well as personality theorists, contend that anxiety and depression may be more accurately explained as a unitary construct referred to as “negative affect” [Chorpita, 2001; Watson and Clark, 1992]. Negative affect present in early childhood may then develop with age into more distinct anxious or depressive disorder. Moreover, early anxious symptoms have been conceptualized as a risk factor for later depression. Our findings also add support to the hypothesis that early anxious symptoms are fairly stable and represent an important risk factor for later difficulties with internalizing symptoms [Gullone et al., 2001; Ialongo et al., 1995]. Our current results reveal that early anxious behaviors similarly affect the psychological risk of community-based, low-income African American children and European American children.

Early anxious symptoms were associated with concurrent externalizing behaviors, but proved to be a buffer for later externalizing behaviors. Anxious symptoms at times overlap with externalizing behaviors, particularly when anxiety is manifested as avoidance. For example, a child that is socially anxious may act out in an attempt to avoid school. At clinical levels, 15% of children with an anxiety disorder have comorbid oppositional defiant disorder [Kendall and Brady, 1995]. Similar to previous research, early anxious symptoms appeared to be a buffer for later externalizing behaviors [e.g., Ialongo et al., 1996]. The explanation for this finding may be multifold. First, anxious children may be more cautious and less likely to engage in the types of externalizing behaviors associated with the teen years (e.g., break rules, hurt others, damage property, tease other children). Second, although anxious children may utilize aggression to avoid or mask symptoms when young, they may have developed more sophisticated avoidance strategies with age. Finally, research has shown that parents of anxious children tend to be overinvolved, whereas parents of children with externalizing problems engage in less supervision [Haapasalo and Tremblay, 1994; Rapee, 1997]. Thus, parents of anxious children in this sample may have provided more parental supervision during adolescence, thus reducing the opportunities for children to become involved in delinquent activities. Additional research is needed to test these hypotheses.

Interestingly, findings varied by informant, revealing two main patterns. First, the relationship between anxious symptoms and academic difficulties was restricted to teacher reports. This result may be a reflection of the differences in item content on the measures (i.e., the teacher report measures of anxiety included more social anxiety symptoms, whereas the parent and child report measures focused primarily on generalized and separation anxiety symptoms). A second possibility is that teachers provide a unique perspective, because they have a classroom of children to compare in a thorough assessment

of child functioning. Previous research has documented poor agreement across parent and teacher reports of anxiety, in part due to differing definitions of what constitutes shy/anxious behavior. In a study of preschool children, Hinshaw and colleagues [1992] found that teachers' ratings of shy behavior were related to peer group interactions much more so than were parental ratings. Though teachers are commonly used to assess attention deficit disorders, historically, they have been underutilized for assessing anxiety. Our current study provides added support for utilizing teachers as reporters in an attempt to help predict difficulties in academic achievement that might otherwise be overlooked.

Second, there appeared to be an age-related pattern in the findings, particularly within the psychological domain. Specifically, the association between early anxiety symptoms and eighth-grade internalizing symptoms was most consistently related to child self-reports rather than parent or teacher reports. Disagreement between child and parent reports of internalizing symptoms are well documented [e.g., Choudhury et al., 2003; Muris et al., 2003]. It is possible that the most accurate reporters of internalizing symptoms shifts from parent to child with age. In first grade, children may be inconsistent reporters or may have less knowledge concerning their emotional experience than do their parents or teachers. Increased emotional understanding coupled with less time spent with parents or a single teacher, may make teens the best reporters of their internal world.

Despite the contributions of our study, results should be interpreted in the context of several limitations. First, although we created the current measures of anxiety and depression using items from commonly used measures of psychological functioning [e.g., Children's Depression Inventory, Kovacs, 1992; Children's Manifest Anxiety Scale—Revised, Reynolds and Richmond, 1978], these measures need additional study to expand their psychometric data. Also, because the measure of anxiety was designed to map onto criteria for overanxious and separation anxiety disorders, more social anxiety concerns may have been undetected. An additional measurement concern reflects a limitation of utilizing an existing database. Despite being a strong study in terms of extended follow-up and range of included outcome measures, the initial research questions were not focused on anxiety per se. Therefore, more commonly used measures of general anxiety symptoms were often unavailable for analyses. Second, the relatively small number of participants involved in the study raises questions concerning statistical power to identify significant relationships. Third, although the longitudinal design represents a significant strength of the study, the absence of an intervening data point (e.g., third grade) prevented detection of potentially nonlinear relations among the variables. Finally, our study examined an often-neglected population of predominately low-income, inner-city African Americans. Future studies are needed to assess whether findings are generalizable to other ethnic/racial populations.

CONCLUSION

This study investigated the concurrent and long-term psychosocial outcomes associated with early anxiety symptoms in a community sample of predominately African American youth. We identified high-anxious youth in first grade by utilizing self-, parent, and teacher reports of anxious symptomology. Concurrent regression analyses revealed that high-anxious children were significantly more likely to score lower on measures of academic achievement and peer acceptance, and higher on indices of depression and aggression than their low-anxious classmates. Longitudinal analyses (follow-up in the eighth grade) revealed that high-anxious first graders scored significantly lower on measures of academic achievement, aggression, and peer acceptance, and higher on measures of anxiety and depression than their peers. Both informant and age affected the pattern of results. Findings suggest that early-onset anxious symptoms in African American children are associated with both concurrent and long-term academic, social, and psychological difficulties. Assessments of

anxiety levels appear warranted in early elementary school, and psychological and/or academic intervention may be appropriate for children with elevated symptoms.

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TABLE 1
Strength of relationship between first-grade anxious symptoms, and concurrent and long-term academic functioning

First-grade shy/anxious behaviors by informant									
	Child self-report			Parent report			Teacher report		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
<i>First Grade</i>									
CTBS Reading	0.23	1.26	0.60–2.63	−0.15	0.87	0.40–1.87	1.04	2.82**	1.33–5.96
CTBS Math	−0.03	0.97	0.47–2.00	−0.14	0.87	0.42–1.8	1.04	2.81**	1.36–5.85
<i>Eighth Grade</i>									
K-TEA Reading	0.18	1.2	0.53–2.74	0.40	1.48	0.61–3.6	1.10	3.01*	1.29–6.99
K-TEA Math	−0.27	0.77	0.33–1.78	−0.63	0.53	0.21–1.32	0.87	2.40*	1.03–5.58

* $P < .05$,

** $P < .01$.

TABLE 2
Strength of relationship between first-grade anxious symptoms, and concurrent and long-term social functioning

	First-grade shy/anxious behaviors by informant								
	Child self-report			Parent report			Teacher report		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
<i>First Grade</i>									
SPPC-Social Acceptance	-0.50	0.61	0.30-1.23	0.37	1.44	0.70-2.95	0.05	1.05	0.52-2.11
POCA-Likability	0.34	1.41	0.65-3.04	0.05	1.06	0.50-2.21	0.13	1.14	0.52-2.50
TOCA-R-Likability	-0.56	0.57	0.12-2.85	-0.43	0.65	0.14-3.04	2.48	11.90**	1.85-76.53
<i>Eighth Grade</i>									
SPPA-Social Acceptance	0.25	1.28	0.62-2.64	-0.08	0.93	0.43-1.99	0.05	1.06	0.51-2.19
POCA-Likability	1.15	3.17**	1.42-7.08	.47	1.60	0.70-3.68	0.08	1.08	0.49-2.38
TOCA-R-Likability	-0.35	0.71	0.31-1.60	.60	1.82	0.78-4.25	0.87	2.39	0.23-24.49

** $P<.01$.

TABLE 3
Strength of relationship between first-grade anxious symptoms, and concurrent and long-term psychological functioning

	First-grade shy/anxious behaviors by informant								
	Child self-report			Parent report			Teacher report		
	β	OR	95% CI	β	OR	95% CI	β	OR	95% CI
<i>First Grade</i>									
BHIF-YC-C-Dependent	1.72	5.57***	2.69–11.54	0.30	1.35	0.66–2.78	0.49	1.63	0.81–3.27
BHIF-YC-P-Dependent	0.54	1.72	0.81–3.65	1.89	6.62***	2.97–14.76	–0.06	0.94	0.43–2.05
POCA-Aggressive	1.36	3.89**	1.79–8.43	0.69	1.99	0.95–4.16	0.86	2.37*	1.1–5.11
TOCA-Aggressive	–0.12	0.89	0.43–1.83	–0.41	0.66	0.30–1.45	1.02	2.76**	1.34–5.68
<i>Eighth Grade</i>									
BHIF-AY- Anxious	0.81	2.24*	1.05–4.77	0.09	1.09	0.50–2.39	0.05	1.05	0.49–2.23
DISC-IV-GAD	1.77	5.84*	1.13–30.33	1.14	3.13	0.54–17.90	0.56	1.75	0.42–7.38
TOCA-Shy	–0.00	1.0	0.46–2.17	0.08	1.08	0.48–2.42	0.45	1.57	0.72–3.42
BHIF-AY-Dependent	1.29	3.64**	1.48–8.99	0.71	2.04	0.93–4.47	0.06	1.06	0.49–2.29
DISC-IV-MDD	–0.15	0.86	0.08–9.77	1.41	4.11	0.30–55.93	–0.17	0.83	0.07–9.51
DISC-IV-CD	–0.52	0.59	0.21–1.65	0.47	1.61	0.60–4.27	–0.56	0.57	0.21–1.59
TOCA-Aggressive	–1.03	0.36*	0.15–0.85	–0.61	0.54	0.23–1.28	–0.28	0.75	0.31–1.85

* $P < .05$,** $P < .01$,*** $P < .001$.