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Generalized anxiety disorder in a nonclinical sample of children: Symptom presentation and predictors of impairment

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Abstract

Presentation of generalized anxiety disorder (GAD) in a nonclinical sample of children (7–11 years old) and factors that predict overall impairment were examined. Symptom presentation was compared in children with GAD ($n = 49$) and anxious children without GAD ($n = 42$). Children with GAD endorsed significantly more worries, greater intensity of worries, and more DSM-IV associated symptoms than anxious children without GAD. Eighty-six percent of children with GAD had a comorbid diagnosis with 4% having a depressive disorder. Number of associated symptoms was most predictive of GAD impairment based on child perspective and intensity of worry was most predictive based on clinician perspective. Overall, findings from the current study are consistent with reports based on clinical samples. The DSM-IV-TR criteria for GAD were supported, with the exception that children with GAD typically present with several associated symptoms, rather than only one.

Keywords

Generalized anxiety disorder; Nonclinical sample; Children

Worry is a normative part of childhood but can also be an indicator of excessive anxiety or an anxiety disorder. Children with generalized anxiety disorder (GAD) have been characterized as worriers and “little adults” due to their excessive, adult-like worries. Common themes of worry in children with GAD include perfectionism, punctuality, health and safety of self and others, world events (e.g., weather disasters, war), family finances, and events in the distant future (e.g., college). Children with GAD also exhibit age-normative worries (e.g., grades, homework, friends), but in excess of same-age peers. Research has attempted to (1) differentiate normative worry from more clinically significant anxiety, and (2) differentiate worry associated with GAD from other anxiety disorders.

Silverman, La Greca, and Wasserstein (1995) examined worry in a community sample of normal children (7–12 years old, $N = 273$) and found that number and intensity of worries differentiated high versus low anxious children. Muris, Meesters, Merckelbach, Sermon, and Zwahlen (1998) reported that children with GAD or overanxious disorder (OAD) endorsed an average of six worries compared to control children who endorsed an average of one worry. Children with GAD/OAD could also be distinguished from control children

due to a higher frequency of their primary worry, a stronger degree of interference in daily functioning, and more difficulty controlling their worry.

Tracey, Chorpita, Douban, and Barlow (1997) reported that clinic-referred children with GAD (7–17 years old, $n = 31$) had a significantly *higher number of worries* ($M = 4.5$) compared to children with different anxiety disorders ($M = 1.3$, $n = 13$) and a control group of normal children ($M = .72$, $n = 18$). Similarly, Weems, Silverman, and La Greca (2000) found that clinic-referred children with GAD had significantly *more domains of worry* ($M = 7.0$) compared to children with a specific phobia ($M = 4.5$). Children with GAD also rated their worry as *more intense* compared to children with specific phobia.

Content of GAD-related worry has been examined to determine what children with GAD are most likely to worry about. Among clinic-referred children with GAD ($n = 26$), Weems et al. (2000) found the most common worries were about tests/grades, hurricanes, physical attack, the future, school, and problems with peers. Pina, Silverman, Alfano, and Saavedra (2002) examined a clinic sample of 111 youth (6–17 years old) and found that uncontrollable excessive anxiety about one's own health was most predictive of meeting diagnostic criteria for GAD compared to other domains of anxiety (e.g., perfectionism, school, health of others). Perrin and Last (1997) described the nature of worried thoughts in children with *any* DSM-III-R anxiety disorder. The most frequent domains of worry included: parents would die; bad things would happen to their parents; and concerns about schoolwork. Additional research is needed to determine whether the content of worry can distinguish children with GAD from children with other anxiety disorders or sub-clinical anxiety.

Another potential means of differentiating GAD from normative worry and from other childhood anxiety disorders involves assessing for the presence of associated symptoms. Of the six associated symptoms listed in criterion C of the DSM-IV-TR (restlessness, easily fatigued, difficulty concentrating, irritability, muscle tension, sleep disturbance), only one is required for the diagnosis of GAD in children whereas three are required for adults. In a study by Tracey et al. (1997), children endorsed an average of 3.4 associated symptoms with restlessness the most common (74%) and muscle tension the least common (29%). The same pattern was reported by Kendall and Pimentel (2003) (i.e., restlessness most common, muscle tension least common) in a sample of 47 children with GAD who ranged from 9 to 13 years of age; however, these children only endorsed an average of one associated symptom. Both studies found that the number of associated symptoms increased with age. Additional research is needed to determine whether these associated symptoms truly differentiate children with GAD from children with other anxiety disorders or from children with sub-clinical worry.

Accurate identification of anxious youth can also be complicated by high rates of comorbidity. Youth with GAD often have a comorbid anxiety disorder and/or mood disorder. Ninety-three percent of participants with GAD in the study by Masi et al. (2004) met criteria for a comorbid disorder. Seventy-five percent of participants had a comorbid anxiety disorder, 56% had a comorbid depressive disorder, and 21% had a comorbid externalizing disorder (ADHD, oppositional defiant disorder, conduct disorder).

While studies outlined above provide great detail about the presentation of GAD among clinic-referred youth, little information is available about GAD in children from nonclinical samples. Nonclinical samples provide information regarding the presentation of GAD in a wider sample of children and may facilitate early intervention. By the time children present to the clinic setting, they have typically been experiencing symptoms for a number of years and developed additional comorbidity (Masi et al., 2004). In their paper examining GAD in

a clinical sample, Masi et al. (2004) call for more data on early-onset GAD as it would allow for early detection of GAD and “enhance the ability of more severely disturbed children to benefit from timely educational, psychosocial, and pharmacological interventions” (p. 759).

The case for early intervention is based on data from prospective studies of anxious youth. Pine, Cohen, Gurley, Brook, and Ma (1998) followed 111 children and adolescents with OAD or GAD prospectively and found that having OAD/GAD at initial assessment was significantly predictive of having social phobia, major depression or panic disorder at 9-year follow-up. This finding is consistent with prospective findings reported by Last, Perrin, Hersen, and Kazdin (1996): presence of OAD in childhood puts one at increased risk for developing additional psychiatric disorders over time. In fact, their findings indicated that children with OAD had the *highest* rate of new disorders at follow-up assessments points.

Therefore, the primary goal of the present study is to understand presentation of GAD in a nonclinical sample of youth 7–11 years of age, toward answering the question, “What do children with GAD look like before presenting to a clinical setting?” The present study will compare the symptoms endorsed by children with GAD to those endorsed by anxious children without GAD. It was hypothesized that children with GAD would endorse more domains of worry, greater intensity of worries, and more associated symptoms compared to anxious children without GAD.

Another goal of the study is to investigate factors of GAD that best predict overall impairment of functioning from child and clinician perspectives: number of worries, intensity of worries, number of associated symptoms, and/or comorbidity. Previous research has addressed which of these symptoms best differentiate children with GAD from children with another anxiety disorder or normal children and which symptoms best predict receiving a diagnosis of GAD. However, only one study to date has examined factors influencing impairment in a clinical sample (Tracey et al., 1997). Tracey et al. (1997) reported that all variables examined were significantly correlated with clinician ratings of GAD severity: mean number of GAD symptoms, mean number of worries, maximum intensity of worries, average intensity of worries, and uncontrollability of worry. The present study aims to expand upon these findings by examining predictors of impairment in a nonclinical sample using multiple regression analysis. Finally, the present study will also compare the content of GAD-related worry with the content of worry associated with an anxious comparison group.

The present study examines these aims from the perspective of child report and clinician ratings (which is based on information gathered through parent and child interviews). Previous studies have supported use of child report rather than parent report when assessing GAD because children are better reporters of internalizing symptoms (Silverman & Eisen, 1992; Tracey et al., 1997). It was expected that this would be especially true for this nonclinical sample, as parents had not initiated clinical services based on their concerns (as would be the case in a clinical sample).

1. Method

1.1. Participants and procedure

Four hundred fifty-three students from second through fifth grades in three schools participated in a school-wide screening for symptoms of anxiety for an early intervention study (Bernstein, Layne, Egan, & Tennison, 2005). After written parental consent and child assent were obtained, the Multidimensional Anxiety Scale for Children (MASC) (March, Parker, Sullivan, Stallings, & Conners, 1997) was administered to children in small groups

at school. Teachers were also asked to nominate students in their classrooms who they perceived as anxious (from among those with parental consent for participation).

Of the 453 students, 208 were invited to participate in further screening due to their MASC Total Anxiety T-score ≥ 58 and/or their teachers identified them as anxious. For additional information on the screening phase of the study please refer to Layne, Bernstein, and March (2006). Of the 208 students, 101 completed the additional screening (107 were not interested, ineligible, or unreachable), which included separate administrations of the ADIS to the child and parent by the same interviewer. The order the ADIS was administered (i.e., parent first versus child first) was randomized. Participants were interviewed at their home, school, or local library.

Ten of the 101 children did not endorse any anxiety symptoms on the parent and child administration of the ADIS; therefore, they were excluded from the present sample. Of the 91 remaining children, 49 met full DSM-IV criteria for GAD (38 of the 49 children had GAD as their primary disorder) and 42 did not meet criteria for GAD. Of the 42 children who did not meet criteria for GAD, 9 met criteria for social phobia (SP), 8 for separation anxiety disorder (SAD), 2 for both SP and SAD, and 23 had subthreshold symptoms of an anxiety disorder (did not meet DSM-IV criteria, but endorsed some symptoms of GAD, SAD, and/or SP). These 42 children were used as a comparison group. The two groups were comparable in terms of age and gender. Of the 49 children with GAD, there were 28 females (57%) and 21 males (43%), ranging in age from 7 to 10 years ($M = 8.5 \pm 1.1$). Of the 42 anxious children without GAD, 27 were females (64%) and 15 were males (36%), ranging in age from 7 to 11 years ($M = 8.6 \pm .99$). Participants in the present sample were comparable in terms of rates of teacher nomination for the screening: 20 of the children with GAD were nominated and 23 of the anxious children without GAD were nominated; this difference was not significant, $\chi^2(1, N = 89) = 2.46, ns$.

The present sample was drawn from a middle-class, suburban school district and was predominantly White. Racial composition of the three schools was 93% White, 4.5% African-American, 1.6% Asian, and .9% American Indian (Minnesota Department of Children, Families and Learning, 2000–2001). In addition, 1.9% of students were Hispanic and 98.1% were not Hispanic. Percentage of students receiving free or reduced rate lunch (measure of lower socioeconomic status) ranged from 20.9% to 22.2% in the three schools. Participants had not been previously diagnosed with GAD nor had they received treatment for anxiety.

1.2. Measures

1.2.1. Multidimensional Anxiety Scale for Children—The MASC was selected for use in the school-wide screenings based on its demonstrated sensitivity to anxiety symptoms in children and its successful use as a screening instrument in a study with adolescents (Dierker et al., 2001). Internal consistency has been demonstrated for all scales (March, 1997) and was high for the present sample, ranging from .70 to .90 (Layne et al., 2006). Test–retest reliability has been shown in epidemiological, clinical, and school samples (March, 1997; March & Sullivan, 1999).

1.2.2. Anxiety Disorders Interview Schedule (ADIS) for DSM-IV parent and child versions—ADIS was used to evaluate anxiety disorders, as well as affective and externalizing disorders (e.g., major depression, dysthymia, ADHD, oppositional defiant disorder, and conduct disorder). Test–retest reliability for the DSM-IV version of the ADIS has been found to be good to excellent (Silverman, Saavedra, & Pina, 2001). The DSM-III-R version of the ADIS has moderate to strong interrater reliability for all anxiety categories (Rapee, Barrett, Dadds, & Evans, 1994). The ADIS was used to assess domains of worry,

intensity of worry, symptoms associated with worry, GAD impairment, and number of comorbid disorders. Results from the child and parent ADIS interviews were used to determine clinicians' composite diagnoses (Silverman & Albano, 1996).

In the GAD assessment section on the ADIS, children were asked whether they worried more than other children their age in nine domains: school, performance, social or interpersonal, little things, perfectionism, health of self, health of significant others, family issues, and things going on in the world. For each of the nine worry domains endorsed, the child was asked to indicate the intensity of worry using the ADIS Feelings Thermometer, which ranges from 0 to 8 (0 = not at all, 8 = very, very much). Children were then asked to indicate which of the six DSM-IV associated symptoms they experience when they worry. Associated symptoms included: trouble relaxing, tiredness, difficulty concentrating, irritability, muscle aches, and trouble sleeping.

Each child indicated how much his or her GAD-related anxiety "messed things up" for them with friends, in school, or at home, and how much it stopped them from doing things he/she wanted to do. Children and parents used the ADIS Feelings Thermometer to arrive at an impairment rating (0–8). To meet DSM-IV-TR criteria the clinician's rating of GAD impairment (i.e., composite CSR) must be ≥ 4 . The clinician's rating of GAD impairment was based on information from the parent and child ADIS interviews and also factored in clinician judgment. Consistent with previous studies (e.g., Choudhury, Pimental, & Kendall, 2003; Tracey et al., 1997), parent–child concordance rates for GAD in the present study were "poor" (GAD kappa = $-.13$). Choudhury et al. (2003) state that when faced with diagnostic discrepancy between child and parent, clinician composite diagnosis is accepted as a viable method for arriving at a child's diagnostic profile.

1.3. Training of independent evaluators

ADIS interviews were conducted by independent evaluators blind to study hypotheses. Independent evaluators were required to have graduate coursework in psychology, Master's Degree in psychology, or current enrollment in a psychology doctoral program. All independent evaluators received 4–8 weeks of training, given by the first author who was trained by Anne Marie Albano, Ph.D., an author of the ADIS. Training included didactic work (teaching, reading, and quizzes) focused on differential diagnosis, watching and coding video-taped interviews, and conducting interviews with actors. All ADIS interviews were audio-taped and reliability checks were completed on 20% of tapes. The procedure consisted of another independent evaluator listening to the tape and formulating a diagnostic summary. Interrater reliabilities for specific anxiety diagnoses were determined by presence or absence of diagnosis and composite CSR within one point. Kappas were $.80$ – 1.00 , showing excellent agreement among independent evaluators.

2. Data analysis

Descriptive statistics for domains and intensity of worry, associated symptoms, and comorbid disorders were conducted for children with GAD. Independent sample *t*-tests were calculated to compare symptom presentation of children with GAD and anxious children without GAD. Males and females did not differ on GAD symptom presentation, content of worries, number of worry domains, intensity of worry, overall impairment, or number of comorbid disorders. Therefore, males and females were combined in the statistical analyses. Lack of gender differences is consistent with previous research findings (Costello, Egger, & Angold, 2005; Masi et al., 2004; Masi, Mucci, Favilla, Romano, & Poli, 1999). Age differences were not examined due to the restricted age range (7–11 years old) of the sample. Multiple regression analyses were used to predict overall GAD impairment ratings from both child and clinician perspectives. Each equation included four dimensions of GAD:

intensity of worry, number of associated symptoms, number of worry domains, and number of comorbid disorders. All variables were entered simultaneously and regression models were computed separately for child and clinician ratings.

Post hoc analyses were completed to determine which associated symptoms were related to the child's rating of GAD impairment. *t*-Tests were conducted to examine the difference in the child's rating of GAD impairment between children who endorsed the associated symptom versus children who did not. Post hoc analyses were also conducted to explore the reason the child impairment rating was predicted by associated symptoms, whereas the clinician impairment rating was predicted by intensity of worries. Two multiple regressions were completed to examine this differentiation. Bonferroni correction was applied for all post hoc analyses ($p < .006$). Bonferroni corrections were not applied to the other analyses since these were planned analyses that address the primary hypotheses.

3. Results

3.1. Nature of GAD-related worry

Children with GAD endorsed excessive worry in an average of 4.12 domains (S.D. = 2.35), which was significantly higher than anxious children without GAD who endorsed an average of 2.60 domains (S.D. = 2.38) ($t(89) = -2.97, p = .004$). Children with GAD had an average worry intensity of 4.11 (S.D. = 1.87), which was significantly higher than anxious children without GAD who reported an average worry intensity of 2.47 (S.D. = 2.02) ($t(89) = -4.03, p < .001$).

3.2. Content of GAD-related worry

Table 1 provides information as to content of worry. The most common domain of worry in children with GAD and anxious children without GAD was the health of significant others (55% and 45%, respectively). Other common domains endorsed by children with GAD included: performance, little things (e.g., saying the wrong thing, something that happened a long time ago), family matters (e.g., divorce, finances), and things going on in the world. Common domains endorsed by anxious children without GAD included: things going on in the world, little things, perfectionism, and health of self. Compared to anxious children without GAD, children with GAD were significantly more likely to worry about their performance, $\chi^2(1, N = 91) = 7.43, p = .01$, and family issues, $\chi^2(1, N = 91) = 8.89, p < .01$.

3.3. Associated symptoms

Children with GAD endorsed an average of 3.40 (S.D. = 1.80) associated symptoms, whereas anxious children without GAD reported significantly fewer associated symptoms ($M = 2.46, S.D. = 1.70, t(67) = -2.13, p = .04$). The most common symptoms associated with worry that were reported by children with GAD included restlessness/trouble relaxing, trouble concentrating, and trouble sleeping, with 67% reporting these symptoms (see Table 1). The most common symptoms reported by anxious children without GAD included trouble sleeping (54%) and trouble concentrating (50%). There was a significantly greater likelihood of children with GAD to report restlessness/trouble relaxing compared to anxious children without GAD (67% and 39%, respectively, $p = .02$).

3.4. Comorbid disorders

The average number of comorbid disorders in children with GAD was 1.76 (S.D. = 1.25). Fourteen percent ($n = 7$) of participants with GAD did not meet criteria for another DSM-IV disorder, 33% ($n = 16$) had one, 29% ($n = 14$) had two, and 24% ($n = 12$) met criteria for three or more comorbid disorders. Sixty-three percent ($n = 31$) met DSM-IV criteria for at least one additional anxiety disorder, 12% ($n = 6$) had a comorbid externalizing disorder,

and 4% ($n = 2$) had a mood disorder (one with dysthymia, one with major depression). The most common comorbid anxiety disorder was SP (67%, $n = 33$), followed by SAD (51%, $n = 25$) and specific phobia (33%, $n = 16$).

3.5. Predictors of GAD impairment

Pearson product moment correlations for all study variables are shown in Table 2. Child ratings of GAD impairment were significantly positively correlated with average intensity of worries ($p = .03$), number of associated symptoms ($p < .001$), and number of worry domains ($p = .02$). Child rating of GAD impairment was not associated with number of comorbid disorders. Clinician ratings of GAD impairment were significantly positively correlated with average intensity of worries ($p = .03$), number of associated symptoms ($p = .04$), and number of comorbid disorders ($p = .02$). Clinician rating of GAD impairment was not associated with number of worry domains.

Results from the multiple regression models predicting child and clinician ratings of GAD impairment are shown in Table 3. The overall model predicting child impairment rating with the four dimensions of GAD was significant ($F(4, 38) = 4.35, p = .01$), accounting for 24% of the variance in the child impairment rating. Only the number of associated symptoms, however, was significantly positively associated with child GAD impairment rating, after controlling for the other dimensions of GAD ($t(38) = 2.51, p = .02$). When all variables in the model were removed, except the number of associated symptoms, the model remained significant ($F(1, 41) = 16.41, p < .001$) and accounted for 27% of the variance in child-rated GAD impairment.

The overall regression model including the four dimensions of GAD impairment predicting clinician rating of GAD impairment was also statistically significant ($F(4, 38) = 4.27, p = .01$), accounting for 24% of the variability (Table 3). Of the four dimensions of GAD, only intensity of worry predicted clinician ratings of GAD impairment ($t(38) = 2.72, p = .01$) after controlling for number of associated symptoms, numbers of worry domains, and number of comorbid disorders. When all other variables, except intensity of worry, were removed from the model, the model remained significant ($F(1, 47) = 5.30, p = .03$) and intensity of worry accounted for 8% of the variance in clinician-rated GAD impairment ($t(47) = 2.30, p = .03$).

3.6. Post hoc analyses

Further analyses were conducted with the sample of children with GAD to better understand which associated symptoms were related to the child rating of GAD impairment. Children who reported muscle aches reported greater GAD impairment ($M = 4.61, S.D. = .70$) than those who did not ($M = 2.88, S.D. = 1.76$) ($t(33.35) = -4.45, p < .001$). Similarly, children who reported trouble sleeping reported greater GAD impairment ($M = 4.17, S.D. = 1.20$) than those who did not ($M = 2.43, S.D. = 1.87$) ($t(18.33) = -3.19, p = .005$). Based on Bonferroni correction for statistical significance for post hoc analyses ($p < .006$), there were no significant differences in impairment for children with and without the following symptoms: nervousness/trouble relaxing ($t(41) = -2.39, ns$), tiredness ($t(41) = -1.84, ns$), trouble concentrating ($t(41) = -1.49, ns$), and irritability ($t(41) = -.65, ns$).

Post hoc analyses were also conducted to better understand the reason child impairment rating was strongly predicted by associated symptoms, while clinician impairment rating was predicted by intensity of worries. Two regressions were performed to test the hypothesis that clinician impairment ratings may be more influenced by parent report of GAD symptoms than child report. One model included child GAD impairment rating to predict clinician rating, while the second model used parent impairment rating to predict clinician

rating. Regression results indicate that child impairment rating significantly predicted clinician impairment rating ($t(41) = 3.84, p < .001$), accounting for 25% of the variance. Conversely, parent ratings were not significantly related to clinician ratings ($t(38) = -.35, ns$).

4. Discussion

The presentation of GAD in the current nonclinical sample was consistent with previous reports based on clinical samples (Tracey et al., 1997). The average number of worry domains endorsed in the current study was 4.12; Tracey et al. (1997) reported an average of 4.50 worry domains. In the current study, worries about health were most common in both children with GAD and anxious children without GAD. In a clinical sample of GAD children, worry about health of self and health of significant others were the areas of worry that were most predictive of a GAD diagnosis (Pina et al., 2002). Children with GAD in this study differed significantly from anxious children without GAD in that they endorsed a significantly higher rate of worry in the domains of performance and family. This finding is consistent with characterization of children with GAD being excessively focused on grades, how they are perceived by others, and family matters, such as finances.

The average number of associated symptoms endorsed by children with GAD in the present study was 3.40. Children with GAD endorsed significantly more associated symptoms than anxious children without GAD and were significantly more likely to experience “restlessness/difficulty relaxing” when worrying compared to anxious children without GAD. Tracey et al. (1997) reported an average of 3.42 associated symptoms; whereas, children with GAD in the Kendall and Pimentel study (2003) endorsed a lower number of associated symptoms (average of one symptom). However, findings from the Kendall and Pimentel study (2003) showed that parents endorsed an average of 3.28 associated symptoms in their children with GAD which is closer to the findings of the other studies. While only one associated symptom is required for DSM-IV-TR diagnosis in youth, children with GAD are likely to experience several associated symptoms. This suggests that consideration should be given in the DSM-V to increasing the number of associated symptoms needed to diagnose GAD in children.

Similar to clinical samples (Masi et al., 2004), GAD in the current sample was highly comorbid with other disorders. Only 14% of participants in the current study had GAD as their only diagnosis. The most common comorbid diagnoses were other anxiety disorders, which occurred in 63% of the participants. Similar to these findings, Masi et al. (2004) found in their clinical sample only 7% of children had GAD as their only diagnosis and 75% had at least one comorbid anxiety disorder. In the present study, comorbid depressive disorders were rare and occurred in only 4% of the sample (one participant had major depression, one had dysthymia). This stands in stark contrast to the 66% reported by Masi et al. (2004).

The difference in rates of comorbid depression may mark a distinct difference between children with GAD in nonclinical versus clinical samples. It is notable that Masi et al. (2004) reported that depression emerged *after* GAD. This finding supports one of the primary rationales for early intervention in children with GAD. It is also noteworthy that the difference between the Masi et al. (2004) GAD sample and the present sample is not accounted for by differing age ranges, as the 66% with comorbid depression in the Masi sample is based on children under 12 years of age. The significant difference in rates of depression may suggest that it is increased anxiety severity that puts youth at risk for the development of comorbid depression.

To determine which factors associated with GAD best predicted impairment, both child and clinician perspectives were examined. Interestingly, the results differed by rater. From the child's perspective, the best predictor of overall GAD impairment was number of associated symptoms. In contrast, the intensity of GAD-related worries most strongly predicted overall impairment from the clinicians' perspective. Post hoc analyses indicate that the associated symptoms most strongly related to overall GAD impairment were muscle aches and difficulty sleeping. From the children's perspective, it appears that impairment is associated with the toll anxiety takes on their functioning in domains such as sleep hygiene, physiological comfort (e.g., restlessness, fatigue, muscle aches), mood (e.g., irritability), and ability to concentrate.

The clinicians' perspective is consistent with previous studies that have shown intensity of the worries to differentiate: (1) children with low versus high anxiety (Silverman et al., 1995); (2) children with GAD versus specific phobia (Weems et al., 2000); and (3) children with an anxiety disorder versus ADHD or normal controls (Perrin & Last, 1997). However, intensity of worry accounted for only 8% of the variance when the other three factors associated with GAD were removed (down from 24% when all four factors were entered). This shows that the clinician rating of impairment is not solely determined by the intensity of worry and is also informed by associated symptoms and comorbidity. Further, the strength of the correlations between impairment and the factors 'intensity,' 'associated symptoms,' and 'comorbidity' were quite strong and comparable. While children with GAD are generally thought of as having a high number of worries, number of 'worry domains' was not associated with impairment ratings. In the clinic setting it is not uncommon for children with GAD to have one or two worry domains (e.g., school) with multiple worries *within* a single domain (e.g., worries about homework, tests, giving presentations, pleasing teachers, arriving to school on time).

It was expected that the factors included in the model would account for a greater proportion of the variance than the findings showed (i.e., 24%). The CSR was the main outcome variable for these models, which is a measure of how much symptoms "interfere or mess things up" for the child. This finding may suggest that while a child is able to report on the nature of his/her worry (i.e., worry domains and intensity of worry) and associated symptoms (which were included as predictors in the model), the child may have difficulty identifying how these symptoms interfere with current functioning.

The difference between factors predicting child ratings and clinician ratings was not accounted for by the influence of parental report on clinician ratings. Post hoc analyses revealed that child rating of GAD impairment emerged as a significant predictor of clinician ratings while parent rating did not. Tracey et al. (1997) also found that child report evidenced higher predictive power of being diagnosed with GAD than did parent report. This finding is likely due to the internalized nature of GAD. Unlike SAD or SP, which are characterized by behavioral avoidance, GAD is characterized by ruminative worry and associated somatic difficulties. As a result, parents may be less aware of the nature and effects of their child's GAD-related worry.

The present study provides a detailed examination of the presentation of GAD in a nonclinical sample of children and evaluates factors predicting GAD impairment from child and clinician perspectives. Presentation of GAD in a nonclinical sample is largely comparable to the presentation in clinical samples and this suggests that screening for GAD in school and community settings using DSM-IV criteria is appropriate. The presentation of GAD in this nonclinical sample was associated with a low rate of depression in contrast with rates as high as 66% in clinical samples of children with GAD (Masi et al., 2004). This underscores the need for early identification and intervention for children with GAD toward

reducing the risk of later developing depression. Findings from the current study further our understanding of the nature of GAD in children and provide support for the DSM-IV-TR criteria for GAD with the exception that most children with GAD have more than one associated symptom.

The study also elucidates which factors associated with GAD are most predictive of impairment. With respect to intervention, in addition to treating the child's worries, interventions for GAD need to specifically target associated symptoms (i.e., muscle tension, insomnia). Relaxation exercises, such as progressive muscle relaxation, are often recommended as a component of CBT interventions for anxious children.

One limitation of the present study is that other factors likely to influence impairment, such as stressors in the child's environment (i.e., family functioning, parental mental health), were not examined. Another shortcoming is the limited demographic variability of the sample and the absence of information about socioeconomic status and ethnicity for the 91 participants. Additional research is needed to determine whether the same predictors of impairment emerge for children when compared to adolescents and whether the presentation of GAD changes with age. Similarly, little is known about the impact of socioeconomic status and ethnicity on the presentation of GAD and on predictors of impairment. Future studies should aim to include a diverse sample to better inform these important issues.

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Table 1

Domains of worry and associated symptoms by diagnostic group

	Children with GAD (<i>n</i> = 49)		Anxious children without GAD (<i>n</i> = 42)		χ^2	P
	<i>n</i>	%	<i>n</i>	%		
Domains of worry						
School	20	41	11	26	2.15	.142
Performance	24	49	9	21	7.43	.006
Social or interpersonal	22	45	11	26	3.42	.064
Little things	24	49	13	31	3.05	.081
Perfectionism	18	37	12	29	0.682	.409
Health of self	20	41	12	29	1.49	.223
Health of significant others	27	55	19	45	0.88	.348
Family matters	24	49	8	19	8.89	.003
Things going on in the world	23	47	16	38	0.29	.591
Associated symptoms ^a						
Restlessness/trouble relaxing	29	67	10	39	5.54	.019
Tired	22	51	8	31	2.74	.098
Trouble concentrating	29	67	13	50	2.07	.150
Irritable/grouchy	19	44	9	35	0.62	.433
Muscle tension	18	42	10	39	0.08	.781
Trouble sleeping	29	67	14	54	1.28	.259

Note: GAD = generalized anxiety disorder.

^aPercentages for children with GAD (*n* = 43) and for anxious children without GAD (*n* = 26) based on valid responses only.

Table 2

Correlations among study variables in children with GAD

	1	2	3	4	5	M (S.D.)
1. Intensity of worry ^a	–					4.11 (1.87)
2. Number of associated symptoms	.37*	–				3.40 (1.80)
3. Number of worry domains ^a	.40*	.59***	–			4.12 (2.35)
4. Child CSR	.34*	.54***	.37*	–		3.60 (1.65)
5. Number of comorbid disorders ^b	.44*	.30	-.08	.16	–	1.76 (1.25)
6. Composite CSR ^b	.32*	.31*	-.02	.52*	.32*	4.65 (.56)

Note: GAD = generalized anxiety disorder.

^a Child report.

^b Clinician report.

* $p < .05$.

*** $p < .001$.

Table 3

Regression results predicting child and clinician GAD impairment rating

Predictor variable	Child CSR		Composite CSR	
	β	<i>p</i>	β	<i>p</i>
Intensity of worry	.18	ns	.42	.01
Number of associated symptoms	.45	.02	.12	ns
Number of worry domains	-.05	ns	-.02	ns
Number of comorbid disorders	-.05	ns	.16	ns
	Adjusted $R^2 = .24$		Adjusted $R^2 = .24$	

Note: GAD = generalized anxiety disorder.