

Generalized Anxiety Disorder and Social Anxiety Disorder in Youth:  
Are They Distinguishable?

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### Abstract

Social anxiety disorder (SAD) is defined by persistent, irrational anxiety in social situations while generalized anxiety disorder (GAD) is characterized by excessive worry unrelated to any specific situation. These two disorders share some features and are frequently comorbid in children and adults. The current study sought to examine this comorbidity and compare the disorders on a number of dimensions in a clinical sample of children and adolescents. It was hypothesized that SAD would be accompanied by higher levels of social anxiety and behavioral inhibition and lower levels of family expressiveness and social functioning than GAD. GAD was hypothesized to be accompanied by higher levels of worry, physiological symptoms, and anxiety sensitivity and lower levels of school functioning as compared to SAD. Youth with both disorders were hypothesized to function more poorly on all dimensions as compared to either disorder alone. Participants were drawn from a sample of 397 (137 female) youth who underwent psychoeducational assessment. A series of analyses of variance, discriminant function analyses, and factor analyses were performed using the entire sample, and repeated by gender and age group. Results indicated youth with GAD had higher levels of harm avoidance as compared to youth with social anxiety disorder. However, the diagnostic groups did not differ on other features. Moreover, results of factor and discriminant function analyses did not distinguish between the two groups. The pattern of results was similar when examined for gender and age, although some differences emerged. Overall, results suggest SAD and GAD overlap significantly in children, with less overlap in adolescents. This raises questions

regarding the validity of current child anxiety taxonomies. Future research should further examine this phenomenon, including longitudinal samples and a wider range of diagnoses.

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## Generalized Anxiety Disorder and Social Anxiety Disorder in Youth:

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#### Introduction

Childhood anxiety disorders affect between 3 and 13 percent of children in community samples. These disorders share features including (a) avoidance of feared objects, situations, or events or enduring such stimuli with distress, (b) maladaptive cognitions, most commonly regarding harm to self or a loved one, and (c) physiological arousal or reactions (Ollendick & Schroeder, 2003). When considering children, as compared with adults, it is important to examine developmental differences in the content of worries, fears, and anxieties (Vasey, Crnic, & Carter, 1994). Indeed, DSM-IV (1994) includes at least one anxiety disorder (Separation Anxiety Disorder) which typically is not diagnosed in adults. The DSM manual also indicates that symptoms for select disorders may be different in children than in adults. For example, while adults may recognize that their anxiety symptoms are irrational, children may not have such insight (APA, 2000). In addition, typical age of onset varies, as do gender ratios and comorbidity profiles, depending on which specific anxiety disorder is being considered (see Weiss & Last, 2001, for review).

Social anxiety disorder (SAD) is defined by a persistent and irrational fear or worry regarding social or performance situations (DSM-IV-TR, 2000). Exposure to such situations provokes an anxiety response that may include panic attacks. Thus, social or performance situations are most often avoided or endured with considerable distress and the symptoms must be present for at least six months for diagnosis. SAD occurs in 3 to 13% of children in community samples, and 6 to 16 percent in clinic-referred samples (Ollendick & Schroeder, 2003). Typical age of onset is reported to be between 15 to 20 years of age (Ost, 1987), although



considerable variability exists, with children as young as 7 years of age being identified. With regard to gender, females are more likely to be affected than are males, with typical age of onset around 11 to 12 years of age (Weiss & Last, 2001). In addition, the majority of children or adolescents treated for SAD also have comorbid anxiety disorders or affective disorders (Strauss & Last, 1993). One such disorder commonly comorbid with social anxiety disorder is generalized anxiety disorder (GAD).

GAD is characterized by excessive and uncontrollable anxiety and worry that has been present for at least six months (DSM-IV-TR, 2000). This worry is not related to a recent stressor or a specific situation. In addition, the worry must be accompanied by physical symptoms such as muscle tension, irritability, disturbed sleep, fatigue, or difficulty concentrating. In children and adolescents, only one physical symptom is required. Like SAD, symptoms must be present for at least six months for diagnosis. The prevalence of GAD in community samples of children ranges between 3 and 12 percent, and 6 to 12 percent in clinical samples (Ollendick & Schroeder, 2003). Most information regarding the epidemiology of GAD in children is derived from studies of Overanxious Disorder (OAD), which was a diagnostic category in DSM-III and DSM-III-R. Data on OAD indicates that the disorder was most likely to occur in older children, with onset at or around puberty (Weiss & Last, 2001). Young children with OAD were most likely to experience comorbid separation anxiety disorder or Attention Deficit/Hyperactivity Disorder (ADHD), while older children often suffered from mood disorders or specific phobias (Strauss & Last, 1993). With regard to gender, OAD tended to decline in males with age, but to remain stable with females such that they had higher rates of OAD by adolescence (Weiss & Last, 2001).

High rates of comorbidity between GAD and SAD have been demonstrated in clinical and epidemiological studies of adults. For example, Mennin and colleagues (2000) reported that 17-33% of individuals with SAD also have GAD. Moreover, 23-59% of GAD patients also have a diagnosis of SAD (Mennin, 2000). Similarly, Barlow (2004) found that 17% of patients with SAD had a lifetime diagnosis of GAD. In children, comorbidity rates between GAD and SAD are also quite high. Verduin and Kendall (2003), in a study of 8-13 year olds, found that 57% of those with a diagnosis of GAD had a comorbid diagnosis of SAD. Moreover, 31.2% of those with SAD were found to have GAD. In a recent study by Walkup and colleagues (2008), 28.1% of anxious children had comorbid primary SAD and GAD, as compared to 11.3% with SAD only and 6.8% with GAD only. With such high rates of overlap between the diagnoses, questions may be raised regarding the validity of the separate diagnoses. Indeed, Ferdinand and colleagues (2006) have suggested that the use of diagnostic subcategories of anxiety may not be useful in pre-adolescents. In a general population study of 10-12 year old children in the Netherlands, these researchers entered the symptoms of SAD, GAD, separation anxiety disorder, and panic disorder into latent class analyses. The researchers found that these analyses did not yield distinct groups based on diagnostic categories. That is, findings did not suggest groups of children with symptoms of just one anxiety disorder, without symptoms of other disorders. Rather, results were more suggestive of a continuous distribution of problematic anxiety, spanning more than one type of anxiety. Five groups of children were identified based on frequency of anxiety symptoms, with no specificity as to type of anxiety (Ferdinand et al., 2006). For example "Group 1" had the highest frequency of overall anxiety symptoms, with symptoms from all of the diagnostic categories. Subsequent groups had similarly diverse ranges of symptoms. These groups differed from the first group in frequency of symptoms, with each

subsequent group having a somewhat lower frequency of overall symptoms than the group before it.

Rutter (1997) has explicated a number of possible sources of apparent comorbidity between psychological diagnoses. First, he suggests that there are seven sources of artifact that could result in the appearance of comorbidity: statistically disproportionate representation of comorbidity in clinical samples; referral bias; the effects of screening procedures in two-stage community surveys; overlapping diagnostic criteria; artifactual diagnostic subdivisions; disorders that are not truly separate; and disorders based on quantitative dimensional features rather than qualitatively distinct categories. In addition to these artifactual sources of comorbidity, Rutter (1997) identified five more substantive bases for apparent comorbidity. According to Rutter (1997), apparent comorbidity could arise from any of the following scenarios: (a) the comorbidity represents two manifestations of the same disorder; (b) the comorbidity reflects two different stages of the same disorder; (c) the comorbidity is the result of the same or correlated risk factors; (d) the comorbidity reflects two nosologically distinct disorders; or (e) the comorbidity is due to one disorder serving as a risk factor for the other.

Thus, many possible explanations for apparent comorbidity have been identified. Many of these explanations suggest that the presence of “comorbidity” does not necessarily indicate the presence of two distinct disorders. Therefore, criteria for determining the presence of distinct disorders are needed. Several such approaches for determining the validity of diagnostic constructs have been proposed (e.g., Cantwell, 1995; Robins & Guze, 1970). Cantwell (1995) proposed a model involving eight domains of clinical investigation to determine diagnostic validity of child and adolescent psychiatric disorders. These include clinical phenomenology, demographic factors, psychosocial factors, biological factors, family genetic factors, family

environmental factors, natural history, and intervention response. In the case of GAD and SAD, some evidence has accumulated in the literature in each of the areas proposed by Cantwell. The evidence will be reviewed briefly in the paragraphs that follow.

Clinical phenomenology. As described above, SAD is defined by a persistent, irrational fear or worry regarding social and/or performance situations (APA, 2000). Such situations may include initiating and maintaining conversations, taking tests, musical or athletic performances, and assertion, among others. These situations are avoided or endured with distress. Moreover, exposure to social or performance situations almost always produces an anxiety response (e.g., blushing, heart palpitations, sweating, trembling, etc.), and may in fact take the form of a situationally-bound panic attack. Common concerns experienced by individuals with SAD include fears of embarrassment. Additionally, individuals may worry that others will perceive them as anxious, “crazy,” or stupid (APA, 2000). There are two subtypes of SAD described in the DSM-IV. Generalized social anxiety disorder applies to individuals who are anxious in most social and performance situations. Those who do not fit this description, but are nervous in only select situations (e.g., performance), are described as having a specific, nongeneralized, or circumscribed type of SAD (APA, 2000).

In contrast to SAD, GAD is characterized by excessive, uncontrollable anxiety and worry about a wide variety of events or activities (APA, 2000). The worries associated with GAD are out of proportion to the actual feared event, and are associated with at least three physiological symptoms (for adults, one physiological symptom in children). These symptoms may include restlessness, irritability, muscle tension, and difficulty sleeping, among others. Adults with GAD typically worry about routine life circumstances, such as vocational responsibilities, health of family members, or minor matters such as household chores (APA, 2000). It is interesting to

note, for our purposes, that DSM identifies worries about competence or performance as most common in children with GAD. These worries are of course also part and parcel of SAD.

Thus, in terms of the clinical phenomenology of SAD and GAD, there are a number of distinguishing features. Most important is the more broad nature of worries related to GAD as compared with the more circumscribed worries of SAD. That said, there are also a number of similarities between the two disorders that may contribute to comorbidity. Of course, both are anxiety disorders and thus, share the common feature of anxiety. Also, both disorders commonly include similar physiological reactions (e.g., sweating), although there seems to be some specificity in the types of symptoms experienced by children with each disorder (Ginsberg et al., 2000).

Nonetheless, both disorders involve performance or evaluative concerns. In particular, as noted above, children with GAD are most likely to worry about issues related to their performance. This is quite similar to symptoms experienced by children with SAD. The DSM-IV (2000) notes that although children with GAD may worry about performance, this diagnosis should be differentiated from SAD if the worries occur even when the children are not being evaluated by others. In contrast, socially anxious children are more likely to worry about their performance only in relation to evaluation by others. Thus, the two disorders have been differentiated in DSM-IV by features distinct to each disorder. However, SAD and GAD share a number of similarities, particularly in children. Such similarities may contribute to high comorbidity rates between the two disorders.

Demographic factors. The demographic profiles of SAD and GAD are also similar. Both have a mean age of onset at or around puberty (age 11-12; Weiss & Last, 2001). In terms of gender, SAD is more common in females than in males (Weiss & Last, 2001). Data on

overanxious disorder (the DSM precursor to GAD) in children indicates that OAD was found to occur equally in young boys as in young girls. However, OAD tended to decline in males with age, so that females had higher rates of OAD by adolescence (Weiss & Last, 2001). It is assumed that a similar pattern is true for GAD, although such data are not currently available.

Psychosocial factors. Both GAD and SAD have been found to contribute to psychosocial impairment. Given the nature of the symptoms of SAD, including excessive anxiety related to social situations, it is not surprising that such a diagnosis is related to impairment of social functioning. Much evidence has accumulated in the adult literature to support such a conclusion. For example, socially anxious adults have been found to be less likely to marry than individuals with other anxiety disorders (Sanderson, DiNardo, Rapee, & Barlow, 1990), and to have both avoidant and dependent relationship patterns with close friends and relatives (Darcy, Davila, & Beck, 2005). Further, among internalizing disorders, SAD has been found to be a unique risk factor for the onset of alcohol and cannabis use (Buckner et al., 2008).

In children and youth with social anxiety, similarly negative outcomes have been reported. For example, socially anxious children have been shown to have more difficulty adjusting to intercommunity relocation (Vernberg, Greenhoot, & Biggs, 2006) and slower recovery to ostracism (Zadro, Boland, & Richardson, 2006). In youth, however, the direction of the relationship between social anxiety and relational difficulties is somewhat unclear. For example, La Greca and Harrison (2005) examined peer relational predictors of social anxiety. The researchers found that peer victimization and negative interactions with close friends predicted social anxiety in adolescents. Further, peer crowd affiliation, positive best friendships, and the presence of a dating relationship served as protective factors against the development of SAD. Thus, the relationship between social anxiety and negative social experiences may be

bidirectional in children and adolescents, such that negative social experiences may contribute to later social anxiety which in turn, may lead to further social difficulties.

In addition to interference with peer and other relationships, socially anxious individuals are at risk for academic difficulties (Fisher, Masia-Warner, & Klein, 2004). Given the fears of evaluation experienced by socially anxious individuals, it is reasonable to assume that the academic environment is stressful for such students. Testing and class presentations are particularly anxiety-provoking for socially anxious students. Anxiety in these situations, along with the accompanying physiological symptoms described above (e.g., heart palpitations, sweating, trembling), may interfere with academic performance and result in poor academic outcomes.

Less information is available regarding the psychosocial consequences of GAD. However, evidence available regarding adults with GAD suggest fewer negative outcomes for individuals with GAD as compared with SAD. For example, in a study of undergraduates, Eng and Heimberg (2006) found that individuals with GAD self-reported more interpersonal problems than controls. However, friends of those with GAD did not ascribe more interpersonal difficulties to their friends with GAD than did friends of controls, and they also reported similar friendship quality as friends of controls. GAD participants reported less secure family relationships than controls, but similar levels of support and attachment to friends.

With regard to marriage, several studies have suggested that individuals with GAD experience significant marital distress (McLeod, 1994; Whisman, Sheldon, & Goering, 2000). However, a recent study examined the lifetime prevalence of GAD and its association with marriage or marriage-like relationships (Yoon & Zinbarg, 2007). In this epidemiological sample, individuals with GAD were more likely to enter into marriage or marriage-like

(cohabiting) relationships than individuals with no diagnosis or those with GAD plus comorbid disorders.

While those with GAD may function relatively well in social relationships, evidence suggests that they may experience interference in work functioning. Henning and colleagues (2007) indicate that treatment-seeking GAD patients report more work impairment than they do in home and family functioning. Further, the patients report lower quality of life as compared with controls in a number of domains, including self-esteem, goals, values, money, work, play, learning, creativity, friends, and relatives. Further, those with comorbid disorders reported less life satisfaction than those without a comorbid diagnosis. Similarly, Mennin, Heimberg, and Jack (2000) report that adult patients with comorbid GAD and SAD report greater severity of functional impairment in addition to greater social anxiety and avoidance, general anxiety, cognitive symptoms, depressed mood, and overall psychopathology than do those with non-comorbid SAD.

In addition to the social and vocational impairment associated with SAD and GAD, both disorders have been associated with comorbid depression (Chavira et al., 2003; TADS Team, 2005). Epidemiological data suggests that 25-31% of adolescents and young adults with SAD suffer from a comorbid depressive disorder (Essau et al., 1999; Wittchen et al., 1999). Chavira and colleagues (2003) recently reported similarly high rates of comorbidity between SAD and depression. Further, in comparison with other anxiety disorders, SAD was the only diagnosis associated with an increased lifetime risk for major depression.

However, other studies have suggested that GAD is also associated with depression in youth. For example, the Treatment for Adolescents with Depression Study (TADS; TADS Team, 2005) found that GAD was the most common comorbid disorder (15.3%) among their



sample of youth with major depression. More concerning is a report from Masi and colleagues (2004) indicating a 56% comorbidity rate of depressive disorders among their sample of youth with GAD.

Biological factors. Physiological and somatic symptoms (e.g., muscle tension, sleep disturbance, etc.) are part of the diagnostic criteria for GAD, but not for SAD. However, DSM-IV (APA, 2000) notes that individuals with SAD often experience somatic symptoms (e.g., heart palpitations, sweating, etc.) in response to feared situations. In an interesting recent study, Ginsburg and colleagues (2006) examined specific somatic symptoms associated with SAD, GAD, and separation anxiety disorder in children. The researchers found that few somatic symptoms distinguished between diagnostic groups. Indeed, restlessness, stomachaches, blushing, palpitations, muscle tension, sweating, and trembling were common to all the anxious children. Although children with all types of anxiety disorders reported these symptoms, socially anxious children reported more sweating than did children without a diagnosis of SAD. In contrast, children with GAD indicated experiencing more restlessness, stomachaches, and chills/hot flushes than those without such a diagnosis. Thus, children with either SAD or GAD experienced significant physiological symptoms. However, the diagnoses had somewhat different physiological profiles as indicated.

In terms of the pathophysiology of brain functioning in GAD and SAD, little research has directly examined specific neural mechanisms involved specifically in these two disorders (see Pine, 1999 for review). However, several researchers have suggested that behavioral inhibition may be related to amygdala hypersensitivity (e.g., Kagan, 1995; Raine, 1998). Given the close link of behavioral inhibition to SAD (Mick & Telch, 1998), it may be that this disorder is also driven by amygdala functioning. No research has directly tested this connection in children

(Pine, 1999). However, Birbaumer et al. (1998) has provided preliminary evidence for amygdala hypersensitivity in socially anxious adults.

With regard to the neural mechanisms of GAD, the amygdala has been implicated in this disorder as well (Pine, 1999). However, GAD is thought to arise from dysfunction of the interaction between the hypothalamus and the amygdala (Pine, 1999). More direct research is needed to address the neural circuitry involved in anxiety disorders, particularly SAD and GAD.

Family genetic factors. More research is available regarding the genetics of anxiety disorders. Twin and adoption studies have consistently failed to demonstrate specific heritability of SAD, or any other anxiety disorder (see Hudson & Rapee, 2000 for review). Rather, what seems to be inherited is a propensity toward anxiety in general. However, one study was suggestive of some specificity to the genetics of SAD. Kendler and colleagues (1992) examined a sample of 2,163 female twin pairs. Among their sample, the researchers found a concordance rate of 24% for SAD among monozygotic twins. In contrast, the concordance rate for dizygotic twins was 15%. Thus, the study suggested that 21% of the variance in SAD was due to specific genetic factors, with another 10% attributed to genetic factors general to all anxiety disorders.

In contrast to twin and adoption studies, family studies regarding SAD have consistently found that the disorder tends to aggregate in families (e.g., Fyer, Mannuzza, Chapman, Martin, & Klein, 1995). Further, the aggregation of SAD has demonstrated specificity, particularly for the generalized form of the disorder (e.g., Stein et al., 1998).

In terms of familial aggregation of GAD, three studies are illustrative. First, Noyes (1987) interviewed 20 GAD probands from the community, 20 controls, and first-degree relatives of both groups. In this study, the odds ratio for GAD in first-degree relatives of GAD probands compared to controls was 6.7. In a similar community-based study, Mendelwicz and

colleagues (1993) found that the morbidity risk of GAD in first-degree relatives of probands versus controls was 4.7. These two studies demonstrated considerable familial aggregation of GAD.

More recently, Newman and Bland (2006) reported another community-based study of the familial aggregation of GAD. Earlier studies, such as those reported above (Mendelwicz et al., 1993; Noyes, 1987) relied on self-selected samples. However, Newman and Bland (2006) utilized a sample identified through systematic random sampling. Their results indicated mild to moderate familial aggregation of GAD. Specifically, when the entire sample of first-degree relatives was analyzed, odds ratios of 1.4 to 1.8 were found for GAD, while the odds ratios were in the range of 2.1 to 2.8 when the first-degree relative sample was restricted to children of probands and controls.

Coelho and colleagues examined the family aggregation of GAD and SAD among a non-clinical sample of women (Coelho, Cooper, & Murphy, 2007). They found that SAD aggregates in the families of socially anxious probands, but not in the families of those with GAD alone. However, the researchers found that GAD did not aggregate in the families of probands with GAD but no history of SAD. This is contrary to the earlier findings indicating specificity of genetic transmission of GAD.

Thus, overall, research suggests that social anxiety disorder aggregates specifically in families, while the evidence for such specificity in the transmission in GAD is more equivocal. Indeed, the findings of Coelho and colleagues (2007) suggest that there may be some genetic overlap between GAD and SAD.

Family environmental factors. In terms of research on family environment, much work has examined anxiety more generally, rather than looking at anxiety disorders specifically

(Masia & Morris, 1998). A number of family environmental factors have been identified as related to anxiety. These include insecure attachment (see Bogels & Brechman-Toussaint, 2006), overprotection (e.g., Hale, Engels, & Meeus, 2006), and rejection (e.g., Arrindell et al., 1983).

With regard to specific family environmental factors related to SAD, low family sociability has been found to be one factor that predicts social anxiety in retrospective studies (e.g., Bogels, van Oosten, Muris, & Smulders, 2001). That is, parents of socially anxious children may tend to isolate their children. They may be less socially active themselves and therefore, fail to model appropriate social interaction. Further, parents of socially anxious children may not encourage social activity in their children to the degree of other parents.

Another family environment factor that may be somewhat specific to social anxiety is parental rejection. For example, Arrindell and colleagues (1983) compared socially phobic individuals to those with other types of phobic disorders. Compared with other phobic groups, socially phobic individuals indicated that both of their parents lacked warmth, were more rejecting, and were more overprotective.

Less research has examined family environmental factors specifically related to GAD. However, in a recent study, Hale, Engels, and Meeus (2006) examined the relationship of perceptions of parenting behaviors to adolescent GAD. They found that adolescent perceptions of rejection, over-control, and attachment (alienation) were all significantly related to GAD. Only parental rejection and alienation provided unique prediction of GAD, however, and these relationships were moderated by age and gender. Specifically, mid-adolescent females perceive more parental alienation in relation to their GAD symptoms than do early or mid-adolescent

males. Additionally, early adolescent males perceive more parental rejection than do mid-adolescent males.

Natural history. In terms of the history and course of GAD and SAD,, both disorders have been shown to be preceded and/or accompanied by long-standing temperamental types. There is some similarity between temperamental correlates of the disorders. However, specific temperamental types have been found to be associated with SAD more so than GAD and vice versa. Specifically, behavioral inhibition seems to primarily precede SAD (Mick & Telch, 1998) while anxiety sensitivity is more closely associated with GAD (Rector, Szacun-Shimizu, & Leybman, 2007).

Behavioral inhibition to the unfamiliar (BI) is defined as a temperament in which novel stimuli are consistently responded to with excessive sympathetic nervous system arousal and behavioral withdrawal (Kagan, Reznick, Clarke, Snidman, Garcia-Coll, 1984). Ten to 15% of Caucasian toddlers are estimated to be characterized by BI (Kagan et al., 1988). In the past, BI has been believed to be an anxiety diathesis in general, predisposing children to any anxiety disorder, rather than any one specific disorder (Biderman et al., 1993). However, more recently, evidence has emerged to suggest that BI may be a specific risk factor for social anxiety. For example, Mick and Telch (1998) examined retrospective reports of BI in young adults with SAD, GAD, comorbid disorders, or minimal social or generalized anxiety. Their findings suggest that BI was associated with symptoms of SAD but not GAD. Further, individuals with comorbid SAD and GAD were no more likely to report childhood history of BI than were those with SAD alone. These results indicate that BI may be a specific risk factor for SAD and not GAD.

Anxiety sensitivity is defined as the fear of anxiety symptoms (“fear of fear”), because of beliefs about their harmful psychological, physical, or social consequences (Reiss, 1987). Like

BI, ASI was originally thought to be a generalized risk factor for anxiety disorders and panic (e.g., Reiss, Peterson, Gursky, & McNally, 1986). Recently, however, researchers have begun to examine the relationship of anxiety sensitivity to specific diagnoses. With regard to GAD and SAD, a recent study examined anxiety sensitivity as it relates to these diagnoses, as well as panic disorder with agoraphobia (Rector, Szacun-Shimizu, & Leybman, 2007). In this study, anxiety sensitivity distinguished between anxiety disorder patients with and without secondary major depressive disorder. Further, the “fear of cognitive dyscontrol” dimension of the Anxiety Sensitivity Index shared strong and nonredundant associations with GAD and depression scores. No other specific diagnoses were distinguished based on any anxiety sensitivity dimensions. Thus, anxiety sensitivity seems to have a specific relationship with GAD as compared to other anxiety disorders.

At the other end of the history spectrum, long-term outcomes of SAD and GAD are similar, but display some differences. In a recent study, Bruce and colleagues examined the long-term course of GAD, SAD, and panic disorder over a 12 year period (2005). The researchers found that SAD and GAD had a more similar long-term course than did either disorder with panic disorder. Further, of the diagnoses examined, SAD had the lowest probability of recovery over the 12 year period. Comorbidity with either GAD or panic disorder with agoraphobia made the overall clinical course of SAD even worse in terms of recovery and recurrence.

Intervention response. The current treatment of choice for anxiety disorders in children and adults is cognitive behavioral therapy (CBT). CBT for anxiety has been shown to be effective in 50-90% of adults (Barlow, 2001) and 60-80% of children (Kendall et al., 2005; Ollendick, King, & Chorpita, 2006). Moreover, CBT has been shown to be quite effective in

treating both SAD and GAD in children and adolescents (see King, Heyne, and Ollendick, 2005 for review).

However, a few differences have been noted in treatment response between SAD and GAD in children. In a comparison of group and individual CBT treatment for children with diagnosed anxiety disorders, Manassis and colleagues (2002) found that most anxious children improved equally well in group or individual CBT. However, the socially anxious children reported greater gains in individual treatment as compared with group treatment. Similarly, CBT treatment which includes a parent-training component appears to be particularly beneficial for children with GAD (Dadds et al., 1997). However, it is unclear at this time if parent-training adds any benefit to the treatment of children with SAD (King et al., 2005).

In terms of pharmacological treatment for children, SAD and GAD have been found to respond to similar medications. Specifically, both disorders have been found to respond reasonably well to treatment with fluoxetine (Birmaher et al., 2003) and sertraline (Compton et al., 2001; Rynn, Siqueland, & Rickels, 2001; Walkup et al., 2008).

In sum, a wide body of literature has been accumulated regarding SAD and GAD, both in adults and in children. Research suggests that the two disorders share a number of features on a variety of dimensions, including amygdala functioning, intervention, overcontrolling and rejecting family environments, and depression. However, there remain a number of factors on which the two disorders appear relatively distinct, including temperamental factors, genetics, family isolation, and others. To date, few studies have directly compared the two diagnoses, particularly in youth samples. This seems particularly relevant, given evidence that anxiety disorders may not be fully differentiated in children (Ferdinand et al., 2006). The current study

will seek to examine the comorbidity of GAD and SAD, and to compare the two disorders on a number of dimensions. The following hypotheses are proposed:

Hypotheses.

*Hypothesis 1:* GAD and SAD can be distinguished based on temperamental features, psychosocial factors, and family factors.

a. SAD is hypothesized to be accompanied by higher social anxiety, lower social functioning, lower family expressiveness, and higher behavioral inhibition than GAD.

b. GAD is hypothesized to be accompanied by higher levels of worry, more physiological symptoms, lower levels of school functioning, and higher anxiety sensitivity than SAD.

*Hypothesis 2:* Comorbid GAD and SAD is hypothesized to be accompanied by more severe temperamental, psychosocial, and family difficulties, as compared with either diagnosis alone.

## Methods

### *Participants*

Participants were drawn from a larger sample of 397 (137 female) children who received psychoeducational assessments at the Child Study Center of Virginia Tech, and whose parents gave informed consent for their data to be used for research purposes (with child assent). The children ranged in age from 7 to 16 years of age, and the majority were Caucasian (n=368). Inclusion criterion for the current study were defined as a diagnosis of SAD, GAD, or both disorders, as determined by composite diagnosis on the Anxiety Disorders Interview Schedule



for Children (ADIS-C/P; see Measures section). Using these criteria, 46 children were included in the SAD group, 50 in the GAD group, and 56 in the Comorbid group.

### *Procedures*

Children presenting to the Child Study Center for purposes of a psychoeducational assessment completed an assessment battery obtained in three, 3-hour sessions. During assessment sessions, children underwent a semistructured diagnostic interview (ADIS-C/P, Silverman & Albano, 1996; see measures), as well as intelligence and achievement measures. Finally, the children completed a number of questionnaires. In addition to the battery administered to the children, parents also participated in a diagnostic interview about their children, as well as completing a number of questionnaires. The measures employed in the current study are described below.

### *Measures*

*Anxiety Disorders Interview Schedule for Children (ADIS-C/P; Silverman & Albano, 1996)*. The ADIS-C is a semistructured diagnostic interview designed to assess childhood anxiety disorders, as well as other related disorders (e.g., ADHD). Following the interview, clinicians assign severity ratings for each diagnosis, on a scale from 0 to 8. For the most part, the parent and child interviews are quite similar. However, the parent interview contains modules for several additional disorders (e.g., Conduct Disorder, Oppositional Defiant Disorder, Enuresis), as well as requesting additional information with regard to history and interference of specific problems. The child version requests additional information regarding symptoms and phenomenology of disorders, and utilizes simpler language. The ADIS-C/P has demonstrated adequate test-retest reliability for child (ages 7-16, kappas of .61-80), parent (kappas of .65-1.00), and combined (kappas of .62-1.00) diagnoses (Silverman, Saavedra, & Pina, 2001). For

purposes of the current study, composite diagnoses were used to determine diagnostic status. Utilizing this system, children receive a clinical diagnosis if either the child or parent clinician assigns the diagnosis with a severity rating of 4 or above. If both parent and child clinicians endorse the diagnosis, the higher of the two severity ratings is assigned to the diagnosis.

Trained graduate clinicians conducted diagnostic interviews for this study, and interviews were videotaped. Interrater reliability was calculated from these videotapes for randomly selected child ( $n=20$ ) and parent ( $n=36$ ) cases. Acceptable levels of interrater agreement were found for both the child ( $\kappa=0.71$ ) and parent ( $\kappa=0.77$ ) interviews across the diagnoses (Grills & Ollendick, 2003).

*Childhood Inhibition Inventory (CII; Reznick, 1992).* The CII is a 30-item questionnaire developed to assess a wide range of behaviors associated with behavioral inhibition. The questionnaire has both a self-report, retrospective version and a concurrent, parent-report version. The current study utilized the parent-report version, which includes items such as, “How often was your child afraid of dogs, cats, or other domestic animals?” Parents are asked to provide responses on a 5-point Likert scale, with higher scores indicating greater behavioral inhibition. The retrospective version of the inventory has demonstrated adequate internal consistency and reliability (Hayward, Killen, Kraemer, & Taylor, 1998; Reznick, 1992).

*Childhood anxiety sensitivity index (CASI; Silverman et al., 1991).* The CASI is an 18-item self-report questionnaire completed by the child. The measure is designed to assess the consequences of experienced anxiety (e.g., “It scares me when I feel nervous”). Responses are provided on a 3-point scale (none, some, a lot). Scores range from 0 to 36, with higher scores indicate greater anxiety sensitivity. The CASI has demonstrated good test-retest reliability (.76; Silverman & Ollendick, 2005).

*Multidimensional Anxiety Scale for Children (MASC; March, 1998)*. This 39-item self-report questionnaire assesses anxiety across four factors including Social Anxiety, Separation Anxiety, Harm Avoidance, and Physical Symptoms. Each item is rated on a 4-point scale (“never true about me” to “often true about me”). Scores are converted to T-scores; higher scores indicate greater anxiety. The MASC has been used extensively in research with children and has demonstrated good reliability and validity (March, Parker, Sullivan, Stallings, and Conners, 1997).

*Children’s Depression Inventory (CDI; Kovacs, 2003)*. The CDI is a 27-item self-report measure that requires children to report on their cognitive, affective, and behavioral symptoms of depression over the preceding week. Items are scored from 0 to 2, with higher scores indicating more severe depressive symptomatology. The CDI has been used extensively in research, and has demonstrated good reliability and validity (Kovacs, 2003).

*Child Behavior Checklist (CBCL; Achenbach, 2001a)*. The CBCL is a 113-item survey assessing competencies and problems of children. The parent will report how true each statement is of their adolescent on a scale of 0 (‘not true, as far as you know’), 1 (‘somewhat or sometimes true’), and 2 (‘very true or often true’). Scores are reported as T-scores. Scores greater than 70 are considered to be clinically significant. The CBCL addresses the child’s sleep problems, aggressive behavior, internalizing and externalizing problems, depressive symptoms, hyperactivity, anxiety, withdrawn behavior, as well as other problem behaviors. The CBCL also includes three social competence scales: Participation (child’s participation in activities), Social (child’s interactions with others), and School (child’s academic performance). The CBCL evidences high reliability ranging from .85 to .96. For purposes of this study, the following

subscales were utilized: School Functioning, Social Functioning, Anxious/Depressed, Withdrawn/Depressed, Social Problems, and Somatic Symptoms.

*Family Environment Scale (FES; Moos, 1989).* The FES is a 90-item self-report inventory completed by parents. The measure has been widely used in psychological research, and is designed to assess the social environment of families. Parents rate statements about their families as true or false. Scores are reported as T-scores. For the current study, only maternal report was utilized. Although the entire measure was administered, only four of the 10 scales were used for purposes of this study. The scales to be used are as follows:

Relationship scales (Cohesion, Expressiveness, Conflict). The Cohesion scale is designed to assess how much help and support families provide each other (e.g., “There is plenty of time and attention for everyone in our family”), while the Conflict scale measures the amount of conflict in the family (e.g., “Family members sometimes get so angry they throw things.” In addition, the Expressiveness scale assesses the degree to which family members are encouraged to share their feelings openly (e.g., “Family members often keep their feelings to themselves”).

In addition to the relationship scales, the current study also included the Control scale. The control scale assesses the degree to which rules and responsibilities are valued in the family.

#### *Analytic Plan*

*Analyses of Variance.* Participants were divided based on diagnostic status into three groups: SAD, GAD, and comorbid (both SAD and GAD). The groups were compared on the following measures: Childhood Inhibition Index, Child Anxiety Sensitivity Index, Multidimensional Anxiety Scale for Children subscales, Childhood Depression Inventory, Child Behavior Checklist subscales, and the Family Environment Scale subscales. Where significant

differences were determined to be present, post-hoc analyses were performed to determine the direction of the differences.

*Discriminant Function Analysis.* A discriminant function analysis (DFA) was conducted to predict membership in the three diagnostic groups (SAD, GAD, COMORBID). In an effort to include those variables thought to be most theoretically significant, the following variables were included as predictors: depression (CDI Total scores), family expressiveness (FES), family cohesion (FES), family conflict (FES), family control (FES), involvement in extracurricular activities (CBCL Activities Scale), social involvement (CBCL Social Scale), and anxiety sensitivity (CASI Total scores).

*Factor Analysis.* The final set of analyses employed the individual symptom items for SAD and GAD from the ADIS-C/P. All symptom items for both disorders were entered into a factor analysis to determine if the individual symptoms grouped together as predicted (i.e., generalized anxiety symptoms in a “GAD factor,” and social anxiety symptoms in a “SAD factor”). This analysis was performed to allow determination of which individual symptoms load most strongly onto each disorder, suggesting the diagnostic utility of individual items. The analyses were performed separately for the ASIS-C and the ADIS-P.

*Cluster Analyses.* A cluster analysis was performed on the set of variables thought to be most theoretically significant in differentiating SAD and GAD. Variables included the Childhood Depression Inventory (Total score), Family Environment Scale (Expressiveness, Control, Conflict, Cohesion scales), Child Behavior Checklist (Activities and Social scales), and the Child Anxiety Sensitivity Index (Total score). The cluster analysis was hierarchical in nature, and employed the between-groups linkage method and squared Euclidean distance as a measure of similarity.

A second cluster analysis was performed including the subscales of the Multidimensional Anxiety Scale for Children (MASC), including the following: Tense/Restless, Somatic/Autonomic, Physical Symptoms, Perfectionism, Anxious Coping, Harm Avoidance, Humiliation/Rejection, Performing in Public, Social Anxiety, Separation/Panic, Anxiety Disorders Index, and MASC Total Scores. As with the cluster analysis described above, the current analysis was hierarchical, using the between-groups linkage method and squared Euclidean distance as a measure of similarity

## Results

### *Demographic Characteristics*

Initial analyses indicated that the three diagnostic groups (SAD, GAD, and COMORBID) did not differ significantly with regard to sex ( $\chi^2=0.57$ ), age ( $F(2,144)=2.00, p>0.05$ ), or family income ( $F(2,120)=0.83, p>0.05$ ). With regard to diagnostic severity, Clinician Severity Ratings for SAD did not differ between the SAD and COMORBID groups ( $t(100)=2.80, p=0.10$ ) or between the GAD and COMORBID groups ( $t(104)=0.04, p=0.84$ ). As expected, the SAD group had higher Clinician Severity Ratings for SAD than the GAD group ( $t(94)=26.86, p<0.001$ ). Similarly, the GAD group had higher Clinician Severity Ratings for GAD than the SAD group ( $t(94)=30.92, p<0.01$ ). See Table 1 for descriptive information regarding the entire sample.

### *Multidimensional Anxiety Scale for Children (MASC)*

One way analyses of variance (ANOVAs) were conducted on the subscales of the MASC. The three diagnostic groups did not differ significantly with regard to the Somatic/Autonomic ( $F(2, 129)=1.36, p>0.05$ ), Perfectionism ( $F(2, 129)=2.19, p>0.05$ ), Humiliation/Rejection ( $F(2, 129)=2.10, p>0.05$ ), or Separation/Panic ( $F(2, 129)=2.52, p>0.05$ )

subscales. Significant differences were revealed, however, on the Tense/Restless ( $F(2, 129) = 5.42, p < 0.05$ ), Physical Symptoms ( $F(2, 129) = 3.43, p < 0.05$ ), Anxious Coping ( $F(2, 129) = 3.59, p < 0.05$ ), Harm Avoidance ( $F(2, 129) = 3.47, p < 0.05$ ), Performing in Public ( $F(2, 129) = 3.76, p < 0.05$ ), and Social Anxiety ( $F(2, 129) = 3.06, p = 0.05$ ) subscales. Significant differences were also found with regard to the Anxiety Disorders Index ( $F(2, 129) = 3.30, p < 0.05$ ) and MASC Total ( $F(2, 129) = 3.94, p < 0.05$ ) scores.

Post-hoc analyses revealed that the COMORBID group had higher scores than the SAD group on the following subscales: Tense/Restless, Physical Symptoms, Perfectionism, Anxious Coping, Separation/Panic, Anxiety Disorders Index, as well as the Total scores. In contrast, the COMORBID group had higher scores than the GAD group only on the Performing in Public and Social Anxiety subscales. The SAD and GAD groups differed from each other with regard to the Anxious Coping and Harm Avoidance subscales, with the GAD group having higher scores than the SAD group on both measures.

#### *Parent Reports of Behavior*

Several subscales of the mother-reported Child Behavior Checklist were analyzed using one-way ANOVAs, including Activities, Social, School, Anxious/Depressed, Withdrawn, Somatic, and Social Problems. These analyses did not reveal any significant differences between groups. However, results approached significance in the case of the Somatic subscale ( $F(2, 140) = 2.74, p = 0.07$ ). Exploratory post-hoc analyses revealed that the COMORBID group had higher Somatic scores than the SAD group.

### *Teacher Reports of Behavior*

ANOVAs were also conducted on the Anxious/Depressed, Withdrawn, Somatic, and Social Problems subscales of the Teacher Report Form (TRF). No significant differences were found.

### *Family Environment Scale*

ANOVAs were conducted on the Conflict, Control, Cohesion, and Expressiveness subscales of the Family Environment Scale, as reported by mothers. Conflict ( $F(2, 130) = 0.53, p > 0.05$ ), Control ( $F(2, 130) = 0.33, p > 0.05$ ), and Expressiveness ( $F(2, 130) = 0.51, p > 0.05$ ) did not differ across the diagnostic groups. Cohesion ( $F(2, 130) = 2.57, p = 0.08$ ) also did not differ across groups, although this effect did approach significance. Subsequent exploratory analyses revealed that Cohesion scores were significantly higher among the COMORBID group as compared to the GAD group.

### *Temperamental Factors and Depression*

A final set of ANOVAs were conducted on the total scores of the Child Depression Inventory, Child Anxiety Sensitivity Index, and the Childhood Inhibition Scale. Significant differences were found for the Child Depression Inventory ( $F(2, 136) = 3.41, p < 0.05$ ) and the Childhood Inhibition Scale ( $F(2, 46) = 4.08, p < 0.05$ ). However, no differences were found for the Childhood Anxiety Sensitivity Index ( $F(2, 134) = 2.22, p < 0.05$ ). Post-hoc analyses indicated that the Comorbid group had higher scores than both the SAD group and the GAD group on the Childhood Inhibition Scale, and higher scores than the SAD group on the Childhood Depression Inventory. See Table 2 for results of these ANOVAS.



### *Discriminant Function Analysis*

A discriminant function analysis (DFA) was conducted to predict membership in the three diagnostic groups (SAD, GAD, COMORBID) utilizing the following variables as predictors: depression (CDI Total scores), family expressiveness (FES), family cohesion (FES), family conflict (FES), family control (FES), involvement in extracurricular activities (CBCL Activities Scale), social involvement (CBCL Social Scale), and anxiety sensitivity (CASI Total scores).

The analysis resulted in two discriminant functions. The combined  $\chi^2(16) = 14.76$ ,  $p = .54$  was not significant. When the first function was removed, the association between the two functions was still insignificant,  $\chi^2(7) = 2.16$ ,  $p = 0.95$ .

### *Factor Analyses*

Principal components analyses was performed including the SAD and GAD items drawn directly from the Parent and Child versions of the Anxiety Disorders Interview Schedule for Children (ADIS-P/C), respectively. For these analyses, the entire available sample was utilized, including those children with and without a diagnosis of SAD or GAD ( $n = 397$ ). This larger sample was utilized in order to ensure sufficient power for the analyses. Items from each interview scale were combined to create eight items for each diagnosis, yielding equal item numbers for each. See Table 7 and 8 for item combinations.

Examination of the eigenvalues and scree plot for the parent-reported ADIS items indicated the presence of two factors: 42.03% of variance was explained, with 32.38% of the variance explained by the first factor. Factor loadings were determined if item factor loadings were greater than or equal to 0.40, and were considered clean loadings if the difference between loadings was greater than or equal to 0.20 (Nunnally & Bernstein, 1994). Using these criteria,

three GAD items (worries about health, family, and things going on in the world) loaded on Factor 2, but no loadings were clean. The remainder of the items loaded on the first factor. See Table 4 for factor loadings.

For the child-reported ADIS items, the eigenvalues and scree plot were also suggestive of a two factor solution with 47.0% of the variance explained (39% of variance accounted for by the first factor). Two GAD items, including those regarding worry about family and worry about things going on in the world loaded negatively on Factor 2. One SAD item regarding musical or athletic performance also loaded on Factor 2. However, no loadings were clean. See Table 5 for factor loadings.

#### *Cluster Analyses.*

A cluster analysis was performed on the set of variables thought to be most theoretically significant in differentiating SAD and GAD. The cluster analysis was hierarchical in nature, and employed the between-groups linkage method and squared Euclidean distance as a measure of similarity. An examination of agglomeration coefficients did not indicate the presence of more than one cluster. No notable increases between coefficients were observed, suggesting that the current sample was comprised of only one cluster with regard to the variables of interest.

A second cluster analysis was performed including the subscales of the Multidimensional Anxiety Scale for Children (MASC). Examination of the agglomeration schedule suggested the presence of two clusters, with no notable increases in the agglomeration coefficients for larger numbers of clusters. Thus, it was determined that a two-cluster solution was most appropriate for the MASC.

An independent samples t-test was performed to determine the nature of differences between the two clusters. The two groups differed significantly with regard to scores on the

following scales: Somatic/Autonomic ( $F = 12.64$ ;  $p < 0.01$ ), Perfectionism ( $F = 11.31$ ,  $p < 0.01$ ), Harm Avoidance ( $F = 6.13$ ,  $p < 0.05$ ), Humiliation/Rejection ( $F = 4.52$ ,  $p < 0.05$ ), Performing in Public ( $F = 4.43$ ,  $p < 0.05$ ), and Social Anxiety ( $F = 5.42$ ,  $p < 0.05$ ). Examination of mean scores for each cluster indicated that children in Cluster 2 had higher scores on all the scales than did children in Cluster 1. The clusters differed on scales thought to be related more closely to GAD (e.g., Somatic/Autonomic, Perfectionism, Harm Avoidance), as well as those more related to SAD (Humiliation/Rejection, Performing in Public, and Social Anxiety). This suggests that children in Cluster 2 represent a more anxious group overall than children in Cluster 1. Thus, contrary to hypotheses, the cluster analysis did not support the presence of distinguishable diagnostic groups representing GAD and SAD, but rather the overall severity of the disorders.

#### *Supplemental Analyses*

In order to explore possible moderators of the preceding analyses, all ANOVA and factor analyses were repeated for children only (ages 7-11;  $n = 251$ ), adolescents only (ages 12-16;  $n = 112$ ), boys only ( $n = 260$ ), and girls only ( $n = 137$ ), respectively. These exploratory analyses are reported below.

#### *Children.*

##### *Multidimensional Anxiety Scale for Children (MASC)*

A set of one-way ANOVAs was performed on the MASC subscales, including only the child group. This set of analyses revealed significant differences between diagnostic groups for the following variables: Tense/Restless ( $F(2, 78) = 3.21$ ,  $p < 0.05$ ), Perfectionism ( $F(2, 78) = 3.76$ ,  $p < 0.05$ ), Anxious Coping ( $F(2, 78) = 3.80$ ,  $p < 0.05$ ), Harm Avoidance ( $F(2, 78) = 4.62$ ,  $p < 0.05$ ), Humiliation/Rejection ( $F(2, 78) = 2.29$ ,  $p < 0.05$ ), Social Anxiety ( $F(2, 78) = 3.82$ ,  $p < 0.05$ ), and the Anxiety Disorders Index ( $F(2, 78) = 3.96$ ,  $p < 0.05$ ).

Post-hoc analyses revealed that the COMORBID group had higher scores than the SAD group on the following subscales: Tense/Restless, Perfectionism, Anxious Coping, Harm Avoidance, Humiliation/Rejection, and the Anxiety Disorders Index. In contrast, the COMORBID group had higher scores than the GAD group on the Tense/Restless, Humiliation/Rejection, Performing in Public, Social Anxiety, and the Anxiety Disorders Index subscales, as well as the MASC Total score. The SAD and GAD groups differed from each other only with regard to the Harm Avoidance index and the Anxious Coping subscale, with the GAD group having higher scores than the SAD group on both measures.

#### *Parent Reports of Behavior*

Subscales of the mother-reported Child Behavior Checklist were analyzed using one-way ANOVAs, including children by age groups. For the child only group, significant differences were found for the Anxious/Depressed ( $F(2, 87) = 3.29, p < 0.05$ ) and Somatic ( $F(2, 87) = 3.28, p < 0.05$ ) subscales. Post-hoc analyses revealed that for children, the COMORBID group had higher scores on both Anxious/Depressed and Somatic subscales, as compared with the SAD group.

#### *Teacher Reports of Behavior*

ANOVAs were also conducted on the subscales of the Teacher Report Form (TRF) for the child group. No significant differences were found with regard to these variables.

#### *Family Environment Scale*

ANOVAs were conducted on the subscales of the Family Environment Scale, as reported by mothers about their young children. None of the subscales differed across the diagnostic groups for this age group.

### *Temperamental Factors and Depression*

ANOVAs were performed on the total scores of the Child Depression Inventory, Child Anxiety Sensitivity Index, and the Childhood Inhibition Scale for young children only. Significant differences were found for the Child Depression Inventory ( $F(2, 88) = 4.68, p < 0.05$ ) and for the Childhood Inhibition Scale ( $F(2, 29) = 4.73, p < 0.05$ ). No differences were found for the Childhood Anxiety Sensitivity Index ( $F(2, 86) = 1.01, p = 0.37$ ). Post-hoc analyses revealed that the SAD and COMORBID groups had higher scores than the GAD group on the Childhood Depression Inventory, although the two groups did not differ from each other. With regard to the Childhood Inhibition Scale, post-hoc analyses revealed that the COMORBID group had higher scores than did the SAD group. See Table 3 for all ANOVA results for young children.

### *Anxiety Disorders Interview Schedule for Children (ADIS-C/P)*

Principal components analyses was performed including SAD and GAD items from the Parent and Child versions of the Anxiety Disorders Interview Schedule for Children (ADIS-P/C), Parent and Child versions, respectively. The item combinations were the same as were used for the larger sample. However, the current analyses included only young children and their parents.

Examination of the eigenvalues and scree plot for the child-reported ADIS items indicated the presence of two factors. Given a two-factor solution, 47.17% of variance was explained, with 39.52% of variance explained by the first factor. As in earlier analyses, factor loadings were determined if item factor loadings were greater than or equal to 0.40, and were considered clean loadings if the difference between loadings was greater than or equal to 0.20 (Nunally & Bernstein, 1994). Using these criteria, two SAD items and one GAD item loaded on Factor 2, but no loadings were clean. See Table 11 for factor loadings.

For the parent-reported ADIS items, the eigenvalues and scree plot were suggestive of a four-factor solution. Factor 1 explained most of the variance (31.41%), with 9.93% of the variance explained by Factor 2, 7.57% explained by Factor 3, and 6.61% of variance explained by Factor 4. Most SAD items loaded on Factor 1, with the exception of item 3 (Meetings) and item 7 (Self-Concept and Appearance). Item 7 loaded with the GAD Perfectionism item on Factor 3, suggesting the presence of an overall Perfectionism factor. SAD item 3 loaded on its own factor (Factor 4). See Table 12 for factor loadings.

### *Adolescents*

#### *Multidimensional Anxiety Scale for Children (MASC)*

A set of one-way ANOVAs was performed on the MASC subscales, including only the adolescent group (ages 12-16). This set of analyses revealed significant differences between diagnostic groups for the Tense/Restless ( $F(2, 45) = 4.52, p < 0.05$ ) and Physical Symptoms ( $F(2, 45) = 3.54, p < 0.05$ ) subscales only. Post-hoc analyses revealed that the COMORBID group and the GAD group both had higher scores than the SAD group on both subscales. In contrast, the COMORBID group had higher scores than the GAD group on the Tense/Restless, Humiliation/Rejection, Performing in Public, Social Anxiety, and the Anxiety Disorders Index subscales, as well as the MASC Total score.

#### *Parent Reports of Behavior*

Subscales of the mother-reported Child Behavior Checklist were analyzed using one-way ANOVAs for the adolescent group. No significant differences were found on any subscales.

#### *Teacher Reports of Behavior*

ANOVAs were also conducted on the subscales of the Teacher Report Form (TRF) for the adolescent group. Only scores on the Somatic subscale were revealed to be significantly

different across diagnostic groups ( $F(2, 34) = 3.79, p < 0.05$ ). Specifically, the SAD group had higher scores than the GAD group with regard to teacher-reported somatic symptoms.

#### *Family Environment Scale*

ANOVAs were conducted on the subscales of the Family Environment Scale, as reported by mothers about their adolescents. None of the subscales differed across the diagnostic groups for this age group.

#### *Temperamental Factors and Depression*

ANOVAs were performed on the total scores of the Child Depression Inventory, Child Anxiety Sensitivity Index, and the Childhood Inhibition Scale for adolescents only. Significant differences were found only for the Childhood Inhibition Scale ( $F(2, 10) = 4.83, p < 0.05$ ). No differences were found for the Childhood Depression Inventory ( $F(2, 45) = 1.92, p = 0.16$ ), nor for the Childhood Anxiety Sensitivity Index ( $F(2, 44) = 1.87, p = 0.17$ ). Post-hoc analyses revealed that the SAD and COMORBID groups had higher scores than the GAD group on the Childhood Inhibition Scale, although the two groups did not differ from each other. See Table 4 for all ANOVA results for the adolescent sample.

#### *Anxiety Disorders Interview Schedule for Children (ADIS-C/P)*

Principal components analyses were also repeated for the adolescent group only, including SAD and Generalized Anxiety Disorder items from the Parent and Child versions of the Anxiety Disorders Interview Schedule for Children (ADIS-P/C), Parent and Child versions, respectively.

Examination of the eigenvalues and scree plot for the parent-reported ADIS items indicated the presence of three factors. Given a three-factor solution, 56.9% of variance was explained, with 39.0% of variance explained by the first factor. All items loaded on Factor 1.

The GAD items of worry about health, family, and things going on in the world also loaded on Factor 2. On Factor 3, two SAD items loaded, including the meetings item, and the assertion item, which loaded negatively. See Table 13 for factor loadings.

For the adolescent-reported ADIS items, the eigenvalues and scree plot were suggestive of a two-factor solution. The two factors explained 48.3% of the variance, with 37.7% explained by the first factor. All items loaded on Factor 1, with two items loading on Factor 2. Loading on Factor 2 were the GAD item regarding worry about family, and the SAD item regarding performance (negative loading). See Table 14 for factor loadings.

### Gender Analyses

#### *Boys*

##### *Multidimensional Anxiety Scale for Children (MASC)*

A set of one-way ANOVAs was performed on the MASC subscales, including only boys. This set of analyses revealed significant differences between diagnostic groups for the Anxious Coping ( $F(2, 77) = 4.78, p < 0.05$ ), Harm Avoidance ( $F(2, 77) = 4.70, p < 0.05$ ), and the Performing in Public ( $F(2, 77) = 3.32, p < 0.05$ ) subscales, as well as MASC Total scores ( $F(2, 77) = 3.53, p < 0.05$ ). Scores on the Tense/Restless ( $F(2, 77) = 3.02, p = 0.06$ ) and Separation/Panic ( $F(2, 77) = 2.91, p = 0.06$ ) subscales also approached significant differences.

Post-hoc analyses revealed that the COMORBID group and the GAD group both had higher scores than the SAD group on both the Anxious Coping and Harm Avoidance subscales. In contrast, the COMORBID group had higher scores than the GAD group on the Performing in Public subscale, and higher than the SAD group on the MASC Total score. With regard to the scales which approached significance, the COMORBID group had higher scores than the SAD group on the Tense/Restless scale.



### *Parent Reports of Behavior*

Subscales of the mother-reported Child Behavior Checklist were analyzed using one-way ANOVAs for boys. Scores on the Somatic subscale were significantly different ( $F(2, 83) = 3.23$ ,  $p < 0.05$ ), while scores on the Activities subscale approached significance ( $F(2, 82) = 2.97$ ,  $p < 0.05$ ). Post-hoc analyses suggested that boys in the COMORBID group had higher scores than the SAD group on the Somatic subscale and lower scores on the Activities subscale than did those in the SAD group.

### *Teacher Reports of Behavior*

ANOVAs were also conducted on the subscales of the Teacher Report Form (TRF) for boys only. No significant differences were found on this measure for boys.

### *Family Environment Scale*

ANOVAs were conducted on the subscales of the Family Environment Scale, as reported by mothers about their boys. None of the subscales differed across the diagnostic groups.

### *Temperamental Factors and Depression*

ANOVAs were performed on the total scores of the Child Depression Inventory, Child Anxiety Sensitivity Index, and the Childhood Inhibition Scale for boys only. Significant differences were found for the Child Depression Inventory ( $F(2, 84) = 3.74$ ,  $p < 0.05$ ) and the Childhood Inhibition Scale ( $F(2, 21) = 4.36$ ,  $p < 0.05$ ). No differences were found for the Childhood Anxiety Sensitivity Index ( $F(2, 82) = 1.71$ ,  $p = 0.19$ ). Post-hoc analyses revealed that boys in the COMORBID group had higher scores than boys in the GAD group on the Childhood Depression Inventory, and higher scores than the SAD group on the Childhood Inhibition Scale. See Table 5 for all ANOVA results for boys only.

*Anxiety Disorders Interview Schedule for Children (ADIS-C/P)*

Principal components analyses of ADIS-C/P items were repeated for boys only.

Examination of the eigenvalues and scree plot for the parent-reported ADIS items indicated the presence of two factors. Given a two-factor solution, 42.0% of variance was explained, with 33.3% of variance explained by the first factor. All items loaded on Factor 1, with three GAD items also loading on Factor 2, including worries about health, family, and things going on in the world. See Table 15 for factor loadings.

For the child-reported ADIS items, the eigenvalues and scree plot were suggestive of a one-factor solution, explaining 38.7% of the variance. All items loaded on the single factor. See Table 16 for factor loadings.

*Girls*

Analyses were repeated for girls and their parents. ANOVA analyses for all measures were repeated for girls only. However, no significant differences were found for any measures among girls. See Table 6 for these results

Examination of the eigenvalues and scree plot for the factor analyses of parent-reported ADIS items for girls indicated the presence of four factors. Given a four factor solution, 62.5.0% of variance was explained. All items but one (SAD Self-Concept/Appearance) loaded on Factor 1. That item, in addition to the SAD item regarding Assertion (negative) loaded on Factor 3. Loading on Factor 2 were the GAD items regarding worries about health, family, and things going on in the world. Factor 4 included the SAD item regarding performance and the GAD perfectionism item (loading negatively). See Table 17 for factor loadings.

For the child-reported ADIS items, the eigenvalues and scree plot were suggestive of a four-factor solution, explaining 65.0% of the variance overall. 48.0% of variance was explained

by the first factor. All items but one (SAD Meetings item) loaded on Factor 1, with that item loading on both Factor 3 and Factor 4. See Table 18 for factor loadings.

### Discussion

High rates of comorbidity between GAD and SAD have been demonstrated in clinical and epidemiological studies of adults and children (Barlow, 2004; Mennin et al., 2000; Verduin & Kendall, 2003). With such high rates of overlap between the diagnoses, questions have been raised regarding the validity of the separate diagnoses (e.g., Ferdinand et al., 2006). The current study was designed to examine the relationship between SAD and GAD in a clinical sample of youth. This included examination of variables thought to distinguish between the two disorders. In addition, the comorbidity of the two disorders was explored. It was hypothesized that SAD and GAD could be distinguished based on temperamental features and family factors.

Specifically, it was hypothesized that SAD would be characterized by higher social anxiety, lower social functioning, lower family expressiveness, and higher behavioral inhibition than GAD. In contrast, GAD was hypothesized to be accompanied by higher levels of worry, more physiological symptoms, lower levels of school functioning, and higher anxiety sensitivity than SAD. Comorbid SAD and GAD were hypothesized to be accompanied by more severe temperamental, psychosocial, and family difficulties as compared with either diagnosis alone.

See Table 19 for a summary of hypotheses and related results.

Overall, results of the current analyses did not support a robust distinction between SAD and GAD among children and adolescents. Symptoms thought to be associated with the individual diagnoses did not reliably discriminate the diagnoses as expected. Results of the discriminant function analysis suggested the presence of two groups, which varied with regard to severity of anxiety across a number of variables. That is, the analysis suggested the presence of

an overall “high anxiety” and “low anxiety” group. This analysis was not supportive of the presence of two distinguishable diagnostic groups, such as SAD and GAD, however. Similarly, when entered into a factor analysis, diagnostic symptoms of the two disorders did not cleanly group by diagnostic categories. Rather, all symptoms of both anxiety disorders tended to load on a single factor. When smaller samples were analyzed (e.g., for girls only), more factors were produced. However, these factors were not reflective of the expected diagnostic taxonomy. Thus, the presence of these multiple factors may be the result of the reduced sample size and associated power, rather than being indicative of a true topography of symptoms. Moreover, it is important to note that no statistical corrections were made for the large number of analyses performed. Therefore, it is possible that the analyses found to be significant may not have been significant with such corrections.

More specifically with regard to the study hypotheses, the current results offered no evidence that SAD was characterized by higher social anxiety, lower social functioning, or lower family expressiveness than GAD. There was some evidence that SAD might be characterized by slightly higher behavioral inhibition than GAD, given that the comorbid group was found to be higher in behavioral inhibition than the GAD alone group, but not higher than the SAD group. However, the GAD and SAD groups did not differ significantly with regard to the dimension of behavioral inhibition.

With regard to GAD, it was not demonstrated to be characterized by stronger physiological symptoms, lower levels of school functioning, or higher anxiety sensitivity than SAD as hypothesized. However, there was some evidence that children and adolescents with GAD do experience higher levels of worry than their socially anxious counterparts. Specifically, those with GAD were demonstrated to engage in higher levels of harm avoidance, specifically

characterized by an anxious coping style, than those with SAD. In addition, when examining the factor analyses, the ADIS GAD items regarding worries about health, family, and the world tended to load as a second factor. Thus, GAD-related worry does seem to be somewhat differentiated from social anxieties.

Despite the weak evidence for distinctions between SAD and GAD, there was evidence that the comorbidity of the two disorders resulted in worse outcomes than either disorder alone. Specifically, those with both disorders were found to have more difficulty with performing in public, higher social anxiety and behavioral inhibition, and stronger family cohesion than those with GAD alone. These results are consistent with the current hypotheses, as well as previous research. Clearly, anxiety regarding public performance and social anxiety are more closely related to SAD than to GAD (APA, 2000). Behavioral inhibition has also been shown to be highly associated with SAD (Mick & Telch, 1998). With regard to family cohesion, past research has suggested that the parents of children with SAD may tend to isolate their children, encouraging their children to socialize primarily within the family (e.g., Bogels, van Oosten, Muris, & Smulders, 2001). Thus, children with SAD may also report more family cohesion as a result of this type of family dynamic.

Similarly, comorbid SAD and GAD predicted more anxious coping, somatic symptoms, behavioral inhibition, and harm avoidance, as well as higher levels of depression than predicted by SAD alone. Thus, overall, comorbidity suggests a more complicated clinical picture than either SAD or GAD alone. It is interesting to note that those with comorbid disorders were functioning differentially worse than each individual disorder. Specifically, comorbidity produced worse outcomes compared to SAD in areas thought to be associated with GAD (e.g., anxious coping, somatic symptoms), and worse outcomes than GAD in areas thought to be

associated with SAD (e.g., public performance, social anxiety). This suggests some possible differentiation of the two disorders, although the evidence is not strong. Examination of the same variables by age and gender yielded similar results.

Thus, the most reliable variable which seemed to differentiate SAD and GAD was a tendency toward harm avoidance, and more specifically, anxious coping. Anxious coping, as measured by the MASC, includes such behaviors as “checking things out first,” “checking for safety,” and “always keeping my eyes open.” Such behaviors suggest techniques for avoiding situations that may result in physical harm. Given the diagnostic criteria for SAD, it makes sense that children with this disorder may score lower on this subscale than children with GAD.

Children with SAD, as compared to those with GAD, are more often characterized by fears of social or emotional harm (e.g., being laughed at, humiliated) rather than fears of physical harm. Meanwhile, the other indices of the MASC, including the physical symptoms, separation anxiety, and even the social anxiety indices could be more reasonably expected not to differ between GAD and SAD. As noted above, both GAD and SAD are often accompanied by physical symptoms (Ginsberg et al., 2006). Although the nature of these symptoms may differ among the two diagnoses (Ginsberg et al., 2006), these differences are not directly assessed by the MASC items, which are more global in nature. Similarly, there is no reason to believe that children with SAD and GAD should differ with regard to separation anxiety, particularly since both diagnoses have been shown to be frequently comorbid with separation anxiety disorder (Verduin & Kendall, 2003). Finally, GAD, as noted above, often includes worries related to social scenarios. Thus, children with GAD may endorse similar social anxieties on self-report questionnaires such as the MASC as those children with SAD. It is interesting to note that in previous research the Anxious Coping subscale of the MASC also differentiated children with Separation Anxiety

Disorder from those with SAD. Similar to the current results, children with separation anxiety disorder were found to have higher scores on the subscale than children with SAD. This suggests that children with SAD may engage in fewer anxious coping strategies than children with other anxiety disorders, and it may be this characteristic that differentiates these children from other anxious children.

When considering the current results, it is also interesting to consider how children with comorbid diagnoses differed in unique ways from children with SAD versus children with GAD. Specifically, the comorbid children had higher scores than children with only SAD on measures of tension and restlessness, physical and somatic symptoms, perfectionism, anxious coping, separation anxiety and panic. In addition, the comorbid children had higher scores on total anxiety and depression as compared to those with SAD. However, the children with only GAD did not differ from the comorbid group or the SAD group on these measures. Thus, consistent with hypotheses, children with GAD had higher scores than children with SAD on these variables, although this difference was not statistically significant.

Likewise, children with comorbid disorders scored higher than children with only GAD on measures of public performance fears, social anxiety, family cohesion, and behavioral inhibition. Children with SAD alone did not differ from the comorbid group or the GAD group on these measures. Thus, children with SAD did have somewhat higher scores on these measures as compared with children with GAD. These differences are generally consistent with study hypotheses. Thus, future research should continue to examine such features and their relationships with GAD and SAD, respectively. The current study employed a somewhat large sample, but larger samples may be needed to demonstrate significant differences with regard to these anxiety-related features.

Although results of the current study suggest that GAD and SAD may be difficult to differentiate, the findings regarding comorbidity indicate that a combination of the two disorders clearly produces worse outcomes than either disorder alone. This is interesting, in that it suggests that although the two diagnoses could not be strongly differentiated based on the variables included in the current study, there is something about being diagnosed with both disorders that is more “negative” than a diagnosis of either disorder alone. There are several possible explanations for such a finding. One possibility is that, rather than distinct diagnoses, children experience varying degrees of overall anxiety. That is, the group identified as comorbid may simply be at the higher end of an anxiety continuum. This comorbid group of children may suffer from higher levels of overall anxiety as compared to children identified as having one anxiety diagnosis and this group, in turn, may have higher levels of anxiety than those with no diagnoses. Thus, children with more intense anxiety and/or a wider range of areas affected by anxiety may be identified by professionals as having comorbid disorders, rather than simply as having more intense overall anxiety.

That said, if our current diagnostic taxonomy is invalid, how do we explain the apparent presentation of children with only one anxiety disorder, without symptoms of another disorder? The rates of comorbidity of GAD and SAD are quite high, with comorbidity reported as high as 57% (Verduin & Kendall, 2003). However, even at that level, almost half of children have pure diagnoses, without comorbidity. Similarly, in the current sample, 45% of children with social anxiety disorder did not have comorbid GAD, while 49% of children with GAD did not have a comorbid diagnosis of social anxiety disorder. Perhaps some children, while anxious in a variety of situations, may tend toward increased anxiety in a particular area. For example, children who tend to be diagnosed with SAD may in fact have worries and fears across a variety of dimensions



(e.g., worries regarding physical safety, specific fears, etc.), but may “specialize” in anxieties related to evaluation and performance. That is, they may have more anxieties in this particular area than in others. Alternately, they may place more value on their anxieties with regard to social situations as compared to other situations, and thus, emphasize these characteristics during assessment.

Another possible explanation for the apparent presence of distinct disorder types relates to the developmental trajectory of childhood anxiety. Some researchers have suggested that young children may begin with high levels of overall, undifferentiated anxiety. This anxiety is hypothesized to become differentiated over the course of childhood and adolescence. Thus, it has been suggested that while young children may not clearly meet criteria for specific anxiety disorders, their anxiety may become more specific and characteristic of specific disorders as they age. The results of the current study provide some preliminary evidence for such a developmental trajectory. Specifically, among the adolescent sample, children with GAD were found to experience more physical symptoms, especially tension, as compared to children with SAD. In contrast, children with SAD were higher in behavioral inhibition and teacher-reported social problems as compared to children with GAD. Among the adolescents, differences with regard to harm avoidance were not observed as they were in the overall sample. This provides some evidence of age-related changes in anxiety. SAD and GAD seem to become more distinct in adolescence, with differences noted across more features. For example, the current results suggest that physical symptoms, and particularly feelings of tension and restlessness, become more important with age in defining GAD as compared to SAD. Further, behavioral inhibition seems to become more strongly associated with SAD rather than GAD in adolescents. This is consistent with research suggesting that behavioral inhibition predicts the development of social

anxiety disorder in adolescence but the development of specific phobias in childhood (Hayward, Killen, Kraemer, & Taylor, 1998; Ollendick & Hirshfeld-Becker, 2002). Indeed, it is interesting to note that Mick and Telch (1998) relied on the retrospective reports of young adults to link behavioral inhibition to SAD as compared to GAD. It may be that underlying behavioral inhibition may become more important as children age, in terms of its contribution to the diagnosis of SAD. With regard to children with clearly differentiated individual disorders as compared to a comorbid presentation, it may be that children move along the developmental trajectory at slightly different rates. That is, young children diagnosed with only one anxiety disorder may simply be precocious in their anxiety disorder development.

Among adolescents, social problems were also differentially associated with SAD than GAD. This result is consistent with earlier research suggesting that SAD is associated with interference in romantic relationships and friendships (e.g., Darcy et al., 2005; Sanderson et al., 1990). It is particularly interesting that it was teacher-reported, and not parent-reported, social problems that distinguished SAD. As noted above, the academic environment is likely to be particularly stressful for those with SAD, given fears of evaluation. Thus, the added stress of the school environment may contribute to increased social difficulties.

Thus, as suggested by earlier researchers, anxiety disorders may become more differentiated over time. However, the cross-sectional nature of the current study makes it difficult to make inferences about developmental trajectory over time. Thus, future studies should employ longitudinal designs to explore this issue further.

The current study also revealed interesting gender differences in anxiety topography. Among boys, the profile of results mirrored that of the overall sample. That is, boys with GAD displayed a more harm avoidant style than those with SAD, particularly with regard to anxious

coping. For girls, however, none of the tested features distinguished those with GAD from those with SAD. This difference may be the result of gender differences in the prevalence of anxiety. That is, girls are more likely than boys to experience anxiety and related disorders in the course of their lifetime. Thus, anxiety symptoms, and an anxious coping style in particular may be particularly noteworthy among young boys. In contrast, girls likely have higher base rates of anxious features and therefore, specific features may be less likely to distinguish GAD from SAD.

#### *Limitations and Future Directions*

The current study has several limitations. First, the study utilized a sample of clinically-referred children, rather than a community sample. Thus, it is possible that the topography of anxiety is different in children who are clinically referred, as compared to those in the community. For example, children in the community may have anxiety profiles that are more circumscribed. By comparison, the anxiety of clinically-referred children may be more severe and pervasive. In addition, the current sample included more boys than girls. This is particularly important given that anxiety and related disorders are more common in females as compared to males (Weiss & Last, 2001). Generalizability of the current findings may have further been limited by the use of a sample from a rural, relatively small town environment. Thus, future research should examine anxiety in community samples of children from a wider range of geographic locations.

In the future, it will be important to examine the overlap between other types of childhood anxiety disorders. It may be that GAD and SAD are more closely related than other types of anxiety disorders. For example, while OCD is currently grouped with the anxiety disorders in DSM-IV, genetic evidence and comorbidity profiles suggest it may be more closely

related to tic disorders such as Tourette's Disorder (e.g., Lombroso & Scahill, 2008). Thus, examination of the relationship of OCD to other childhood anxiety disorders may indicate that OCD is more distinct from the other disorders than they are from each other. However, other researchers have also suggested that childhood anxiety disorders may, as a group, be difficult to distinguish, particularly in young children (Ferdinand et al., 2006). Thus, examination of the full range of childhood anxiety diagnoses will be critical in determining the true diagnostic profile of anxiety disorders.

In addition, future research should employ longitudinal designs to examine the developmental trajectory of anxiety in children. The current study employed a cross-sectional design to examine both child and adolescent samples, which allowed some examination of age differences. However, as stated above, a longitudinal design could better provide a picture of the developmental trajectory of anxiety disorders over time. Further, while the current study compared young children to adolescents, future research should also follow children into adulthood, to provide a more full understanding of the lifetime trajectory of anxiety. Moreover, future studies should seek to include a larger number of participants, in order to better examine the interaction between age and gender in the topography and trajectory of anxiety.

Finally, the current study examined a number of measures of psychosocial functioning as well as family and temperamental characteristics thought to be associated with generalized and social anxiety disorders. Future studies should include other such variables (e.g., genetics, treatment outcome) to provide a full understanding of the differential diagnosis of these disorders.

### *Implications*

Despite its limitations, the current study is one of the first to directly compare GAD and SAD in a sample of youth. A large body of previous research was synthesized to identify the characteristics thought to be most closely associated with anxiety disorders and particularly, SAD and GAD. In addition, a range of statistical methodologies were employed to explore the two diagnoses and their comorbidity. Thus, the current study provides an important contribution to the literature regarding diagnostic taxonomy and comorbidity. Overall, results of the study suggest that there may be more overlap between GAD and SAD than there are distinctions. Therefore, the utility of separate diagnoses will need to be explored further. Rather than a system of discrete diagnoses, future diagnostic systems may be based on a dimensional system, in which severity of anxiety may be more critical than specific typologies of anxiety.

At the same time, the current study did identify some features that may be particularly important with regard to differential diagnosis. Specifically, an overall anxious coping style and worry about physical rather than emotional harm seem to be more strongly associated with childhood GAD as compared to SAD. Thus, examination of these particular features should take precedence when making diagnostic decisions regarding GAD.

The current study also highlights the importance of anxiety comorbidity. That is, children with more than one anxiety disorder diagnosis are likely to function more poorly in a number of areas as compared to those with only one diagnosis. Again, further research will need to determine if anxiety comorbidity represents true comorbidity in youth samples, or if it simply represents more severe levels of overall anxiety. Either way, children with anxieties in multiple arenas are at increased risk for poor outcomes. Thus, these children should be carefully identified and provided with treatment to address the full range of their anxieties. That said, the

current results suggest that the treatment and subsequent resolution of even one of two comorbid disorders may contribute to better overall functioning.

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Table 1. Demographic and clinical characteristics of children with SAD, GAD, children with both disorders, and clinical controls.

<u>Characteristic</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>Clinical</u>	<u>F/<math>\chi^2</math></u>
GENDER (n)					4.12
Female	18	20	37	71	
Male	25	26	19	160	
RACE/ETHNICITY (n)					13.69
Caucasian	45	50	48	225	
Other	1	0	7	19	
AGE (m)	10.98	10.04	10.96	10.08	2.64
(sd)	2.68	2.76	2.40	2.80	
FAMILY INCOME (m)	54254	41282	51069	47349	0.81
(sd)	35699	32385	60458	34294	
ADIS Composite					
Social Anxiety CSR (m)	5.11	0.18	5.41	0.19	723.54***
(sd)	1.06	0.72	1.22	0.88	
ADIS Composite					
GAD CSR (m)	0.00	5.16	5.52	0.11	1025.83***
(sd)	0.00	1.13	1.14	0.73	

NOTE: m=mean, n=number, sd=standard deviation. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001



Table 2. Means, Standard Deviations and Results of Univariate Analyses Examining Children with Social Anxiety Disorder, Generalized Anxiety Disorder, and Children with Both Diagnoses.

<u>Dependent Variable</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>F-value</u>
MASC				
Physical Symptoms	48.72 <sup>a</sup>	51.38 <sup>a,b</sup>	55.65 <sup>b</sup>	3.43*
	11.68	13.23	13.00	
Somatic	48.54	49.79	52.67	1.36
	10.98	12.99	12.66	
Tense	49.10 <sup>a</sup>	53.00 <sup>a,b</sup>	57.59 <sup>b</sup>	5.42**
	11.00	12.96	12.45	
Social Anxiety	53.00	51.40	58.06	3.06
	13.18	13.41	14.11	
Humiliation	53.28	52.95	58.18	2.10
	13.82	13.16	14.42	
Performance	51.62 <sup>a,b</sup>	48.71 <sup>a</sup>	55.67 <sup>b</sup>	3.76*
	11.72	12.70	12.38	
Harm Avoidance	45.05 <sup>a</sup>	50.98 <sup>b</sup>	51.63 <sup>b</sup>	3.47*
	12.15	13.95	11.60	
Perfectionism	47.41	49.69	52.06	2.19
	11.24	10.22	10.07	
Anxious Coping	44.44 <sup>a</sup>	51.55 <sup>b</sup>	51.08 <sup>b</sup>	3.59*
	12.13	15.07	12.96	
Separation/Panic	50.15	55.67	56.47	2.52
	13.44	13.95	14.50	
Anxiety Disorders	49.36 <sup>a</sup>	51.45 <sup>a,b</sup>	56.41 <sup>b</sup>	3.30*
	13.25	13.59	13.63	
Total	49.15 <sup>a</sup>	51.88 <sup>a,b</sup>	57.37 <sup>b</sup>	3.94*
	13.56	15.30	13.88	
FES				
Cohesion	50.93	51.77	44.20	2.57
	16.60	17.63	18.48	
Conflict	48.90	49.05	51.16	0.53
	10.74	11.89	12.76	
Control	53.27	52.07	53.65	0.33
	10.74	11.89	12.76	
Expressiveness	50.71	53.23	51.37	0.51
	12.44	10.84	12.44	
CBCL				
Anxious/Depressed	64.20	66.61	67.81	1.52
	10.18	10.05	9.77	
Withdrawn	64.33	61.37	63.76	1.27
	10.43	7.30	10.54	
Somatic	61.13	64.14	65.59	2.74
	9.55	8.44	9.60	
Social Problems	62.25	63.84	63.89	0.30
	9.61	11.71	11.87	
Activities	45.48	44.53	41.93	1.94
	8.26	9.16	9.84	

	School	33.97 7.27	35.00 7.71	34.94 7.83	0.22
	Social	37.95 9.43	38.70 9.97	37.62 9.59	0.16
TRF	Anxious/Depressed	59.33 11.40	61.18 11.15	59.86 8.75	0.31
	Withdrawn	60.85 7.72	62.05 11.65	58.95 8.91	1.09
	Somatic	57.33	53.95	55.47	1.50
	Social Problems	60.52 9.93	62.34 9.72	58.98 8.06	1.37
CDI		52.28 <sup>a,b</sup> 12.24	49.57 <sup>a</sup> 9.87	55.64 <sup>b</sup> 12.32	3.41*
CASI		25.56 6.48	28.50 8.12	28.76 8.25	2.22
CII		1.35 <sup>a</sup> 0.47	1.41 <sup>a</sup> 0.48	1.75 <sup>b</sup> 0.43	4.08*

Note: \* =  $p < .05$ , \*\* =  $p < .01$ . Means are listed above standard deviations in table. Superscripts denote significant differences.

Table 3. Means, Standard Deviations and Results of Univariate Analyses Examining Young Children (ages 7-11) with Social Anxiety Disorder, Generalized Anxiety Disorder, and Young Children with Both Diagnoses.

<u>Dependent Variable</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>F-value</u>
MASC				
Physical Symptoms	50.48	49.59	56.59	2.20
	13.49	14.80	13.22	
Somatic	49.78	48.45	53.62	1.11
	12.62	14.56	13.43	
Tense	51.09 <sup>a</sup>	50.97 <sup>a</sup>	58.55 <sup>b</sup>	3.21*
	12.39	13.43	12.57	
Social Anxiety	54.30 <sup>a,b</sup>	50.00 <sup>a</sup>	60.03 <sup>b</sup>	3.82*
	14.58	13.27	13.88	
Humiliation	53.48 <sup>a</sup>	51.03 <sup>a</sup>	61.34 <sup>b</sup>	4.29*
	14.87	12.27	14.69	
Performance	54.09	48.31	55.72	2.78
	12.70	12.80	12.01	
Harm Avoidance	44.87 <sup>a</sup>	53.00 <sup>b</sup>	54.72 <sup>b</sup>	4.62*
	13.26	12.22	11.27	
Perfectionism	46.52 <sup>a</sup>	51.45 <sup>a,b</sup>	53.48 <sup>b</sup>	3.76*
	10.17	8.79	8.91	
Anxious Coping	44.96 <sup>a</sup>	53.28 <sup>b</sup>	54.55 <sup>b</sup>	3.80*
	13.60	14.06	12.24	
Separation/Panic	52.78	56.59	55.93	0.53
	15.34	14.05	12.49	
Anxiety Disorders	50.70 <sup>a</sup>	50.79 <sup>a</sup>	59.52 <sup>b</sup>	3.96*
	15.59	12.65	12.35	
Total	51.09	50.83	59.21	2.91
	16.21	15.50	12.77	
FES				
Cohesion	49.50	54.29	45.33	2.22
	14.81	16.90	16.46	
Conflict	47.45	45.18	49.57	1.17
	9.46	10.14	12.45	
Control	52.18	53.04	53.73	0.19
	10.94	8.95	7.48	
Expressiveness	51.36	52.29	49.27	0.41
	15.12	10.74	13.21	
CBCL				
Anxious/Depressed	62.08 <sup>a</sup>	67.06 <sup>a,b</sup>	68.50 <sup>b</sup>	3.29*
	8.27	10.68	9.66	
Withdrawn	61.84	61.67	63.59	0.41
	9.06	7.82	10.87	
Somatic	60.60 <sup>a</sup>	62.88 <sup>a,b</sup>	66.72 <sup>b</sup>	3.28*
	9.41	8.57	9.63	
Social Problems	62.00	63.52	62.84	0.14
	8.91	11.31	11.77	
Activities	47.04	43.65	42.78	1.88
	6.72	9.71	8.64	

	School	34.13 7.39	34.77 8.70	35.07 8.99	0.08
	Social	38.88 9.96	37.84 9.50	38.36 9.85	0.08
TRF	Anxious/Depressed	59.05 11.76	63.23 11.70	59.96 8.95	0.99
	Withdrawn	61.74 6.62	63.27 12.28	57.78 6.36	2.60
	Somatic	54.84 7.27	54.62 6.85	55.81 8.75	0.17
	Social Problems	60.11 10.24	62.88 9.86	59.07 7.99	1.17
CDI		54.96 <sup>a</sup> 14.16	48.00 <sup>a</sup> 10.13	56.85 <sup>b</sup> 12.87	4.68*
CASI		26.92 7.51	28.53 9.04	30.12 8.46	1.01
CII		1.14 <sup>a</sup> 0.34	1.53 <sup>a</sup> 0.55	1.70 <sup>b</sup> 0.47	4.73*

Note: \* =  $p < .05$ , \*\* =  $p < .01$ . Means are listed above standard deviations in table. Superscripts denote significant differences.

Table 4. Means, Standard Deviations and Results of Univariate Analyses Examining Adolescents (ages 12-16) with Social Anxiety Disorder, Generalized Anxiety Disorder, and Adolescents with Both Diagnoses.

<u>Dependent Variable</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>F-value</u>
MASC				
Physical Symptoms	46.19 <sup>a</sup>	55.90 <sup>b</sup>	54.27 <sup>b</sup>	3.54*
	8.21	8.36	12.88	
Somatic	46.75	54.50	51.41	2.10
	8.14	6.92	11.75	
Tense	46.25 <sup>a</sup>	56.80 <sup>b</sup>	56.32 <sup>b</sup>	4.52*
	8.16	12.00	12.47	
Social Anxiety	51.13	54.50	55.45	0.54
	11.03	12.16	14.31	
Humiliation	53.00	57.50	54.00	0.38
	12.64	13.45	13.23	
Performance	48.06	49.10	55.59	2.18
	9.43	12.35	13.14	
Harm Avoidance	45.31	44.80	47.55	0.25
	10.76	15.93	10.96	
Perfectionism	48.69	44.40	50.18	0.80
	12.87	12.15	11.36	
Anxious Coping	43.69	46.30	46.50	0.26
	10.02	15.71	12.70	
Separation/Panic	46.38	52.20	57.18	2.61
	9.33	14.57	17.07	
Anxiety Disorders	47.44	51.50	52.32	0.70
	9.03	14.34	14.44	
Total	46.38	53.50	54.95	2.06
	8.15	14.96	15.18	
FES				
Cohesion	51.56	47.42	42.42	0.93
	20.12	15.90	21.65	
Conflict	51.69	56.00	53.68	0.41
	12.89	10.73	13.17	
Control	54.00	49.00	53.53	0.87
	11.17	12.14	9.62	
Expressiveness	48.81	54.25	54.68	1.71
	9.01	10.42	10.60	
CBCL				
Anxious/Depressed	69.33	64.67	66.82	0.58
	12.46	9.78	10.07	
Withdrawn	70.08	60.08	64.00	3.00
	12.17	7.09	10.29	
Somatic	62.67	66.83	63.95	0.60
	10.97	8.24	9.54	
Social Problems	63.00	61.92	65.41	0.35
	11.87	12.96	12.13	
Activities	43.17	45.25	40.68	0.77

		11.02	7.55	11.47	
	School	34.36	35.55	34.74	0.10
		7.72	5.80	5.74	
	Social	36.09	42.17	36.32	1.62
		9.29	10.61	9.23	
TRF					
	Anxious/Depressed	60.67	57.38	59.71	0.26
		11.96	10.25	8.67	
	Withdrawn	59.83	59.38	60.82	0.05
		9.64	12.03	11.90	
	Somatic	61.50 <sup>a</sup>	51.00 <sup>b</sup>	54.94 <sup>a,b</sup>	3.79*
		13.19	2.83	6.31	
	Social Problems	61.92	58.50	58.82	0.46
		10.12	11.06	8.42	
CDI		48.25	54.27	53.67	1.92
		7.31	7.60	11.40	
CASI		23.40	27.36	26.62	1.87
		3.64	3.93	7.61	
CII		1.88 <sup>a</sup>	1.10 <sup>b</sup>	1.86 <sup>a</sup>	4.83*
		0.50	0.15	0.35	

Note: \* =  $p < .05$ , \*\* =  $p < .01$ . Means are listed above standard deviations in table. Superscripts denote significant differences.

Table 5. Means, Standard Deviations and Results of Univariate Analyses Examining Boys with Social Anxiety Disorder, Generalized Anxiety Disorder, and Boys with Both Diagnoses.

<u>Dependent Variable</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>F-value</u>
MASC				
Physical Symptoms	47.96	50.09	55.42	2.47
	10.87	15.29	12.77	
Somatic	47.35	47.86	52.70	1.64
	9.60	14.02	12.82	
Tense	48.87	52.41	57.15	3.02
	10.72	15.06	11.98	
Social Anxiety	50.00	48.32	55.61	2.40
	11.53	12.48	14.34	
Humiliation	51.22	49.82	55.70	1.38
	13.59	12.89	14.59	
Performance	48.09 <sup>a,b</sup>	46.32 <sup>a</sup>	53.91 <sup>b</sup>	3.32*
	8.87	12.22	12.69	
Harm Avoidance	43.48 <sup>a</sup>	52.55 <sup>b</sup>	51.91 <sup>b</sup>	4.70*
	11.81	11.76	10.96	
Perfectionism	46.26	50.36	51.39	1.71
	11.87	9.13	10.28	
Anxious Coping	42.91 <sup>a</sup>	53.50 <sup>b</sup>	52.12 <sup>b</sup>	4.78*
	12.27	13.88	12.45	
Separation/Panic	47.70	56.91	55.06	2.91
	11.42	14.62	14.76	
Anxiety Disorders	46.70	49.73	53.70	2.18
	11.44	12.57	13.16	
Total	46.61 <sup>a</sup>	49.73 <sup>a,b</sup>	55.88 <sup>b</sup>	3.53*
	11.06	15.64	13.07	
FES				
Cohesion	51.43	52.24	42.19	2.54
	17.82	18.61	18.31	
Conflict	50.83	46.14	51.13	1.17
	13.04	10.92	12.82	
Control	53.57	49.86	52.26	0.99
	10.60	7.82	8.10	
Expressiveness	49.70	51.00	53.65	0.78
	13.48	10.29	11.69	
CBCL				
Anxious/Depressed	66.95	66.96	68.31	0.16
	11.50	10.91	10.36	
Withdrawn	64.82	62.42	63.89	0.33
	12.25	7.72	10.82	
Somatic	59.82 <sup>a</sup>	64.31 <sup>a,b</sup>	66.44 <sup>b</sup>	3.23*
	9.88	9.44	9.68	
Social Problems	61.91	63.12	64.97	0.48
	11.25	11.73	12.36	
Activities	46.86	41.80	40.61	2.97
	8.91	8.58	10.81	

	School	34.35 8.65	34.87 7.90	36.48 7.78	0.50
	Social	37.81 11.23	35.80 9.20	34.97 8.61	0.58
TRF	Anxious/Depressed	61.89 13.46	63.62 11.73	59.17 8.60	1.03
	Withdrawn	60.67 8.72	64.57 12.06	60.00 10.09	1.27
	Somatic	58.56 12.36	54.29 7.14	55.04 6.37	1.36
	Social Problems	62.50 11.50	63.95 9.98	60.28 8.52	0.89
CDI		49.57 <sup>a,b</sup> 10.47	47.23 <sup>a</sup> 10.27	54.58 <sup>b</sup> 11.46	3.74*
CASI		24.95 6.00	26.84 8.29	28.64 7.53	1.71
CII		1.12 0.42	1.64 0.63	1.81 0.43	4.36*

Note: \* =  $p < .05$ , \*\* =  $p < .01$ . Means are listed above standard deviations in table. Superscripts denote significant differences.



Table 6. Means, Standard Deviations and Results of Univariate Analyses Examining Girls with Social Anxiety Disorder, Generalized Anxiety Disorder, and Girls with Both Diagnoses.

<u>Dependent Variable</u>	<u>SAD</u>	<u>GAD</u>	<u>Comorbid</u>	<u>F-value</u>
MASC				
Physical Symptoms	49.81	52.65	56.06	1.02
	13.05	11.41	13.79	
Somatic	50.25	52.76	52.61	0.21
	12.85	11.96	12.73	
Tense	49.44	52.53	58.39	2.42
	11.74	10.71	13.58	
Social Anxiety	57.31	54.82	62.56	1.51
	14.54	13.07	12.88	
Humiliation	56.25	56.41	62.72	1.39
	14.05	11.85	13.30	
Performance	56.69	51.35	58.89	1.64
	13.65	12.72	11.43	
Harm Avoidance	47.31	48.76	51.11	0.33
	12.65	15.66	13.01	
Perfectionism	49.06	48.71	53.28	1.01
	10.43	11.42	9.83	
Anxious Coping	46.63	48.88	49.17	0.17
	11.97	15.55	14.00	
Separation/Panic	53.69	53.59	59.06	0.82
	15.62	13.67	14.04	
Anxiety Disorders	53.19	52.59	61.39	2.16
	15.04	13.55	13.43	
Total	52.81	53.82	60.11	1.15
	16.19	14.79	15.25	
FES				
Cohesion	48.73	52.21	47.67	0.37
	16.18	14.84	18.80	
Conflict	46.80	50.95	51.22	0.81
	6.79	11.57	13.03	
Control	52.00	54.00	56.06	0.59
	11.72	11.86	8.26	
Expressiveness	51.20	54.95	47.44	1.82
	12.12	10.72	13.03	
CBCL				
Anxious/Depressed	60.73	65.68	66.83	2.23
	6.82	9.89	8.68	
Withdrawn	64.07	59.63	63.50	1.36
	8.41	7.30	10.26	
Somatic	63.40	63.42	63.89	0.02
	9.70	7.43	9.50	
Social Problems	62.93	63.05	61.72	0.09
	7.54	11.85	10.82	
Activities	44.20	47.28	44.56	0.77
	7.60	9.07	7.10	

	School	34.00	35.11	32.38	0.70
		5.38	8.27	7.36	
	Social	38.33	43.26	42.21	1.36
		7.45	9.33	9.66	
TRF	Anxious/Depressed	56.62	59.00	61.20	0.81
		8.13	10.98	9.17	
	Withdrawn	61.46	58.77	56.93	1.00
		6.69	11.89	5.79	
	Somatic	55.85	52.92	56.27	0.75
		6.69	4.80	10.17	
	Social Problems	58.46	58.46	56.47	0.29
		7.47	9.88	6.63	
CDI		55.94	52.94	57.63	0.68
		13.78	8.41	13.91	
CASI		26.35	30.17	29.00	0.98
		7.17	7.41	9.76	
CII		1.57	1.16	1.69	2.65
		0.52	0.14	0.45	

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Note: \* =  $p < .05$ , \*\* =  $p < .01$ . Means are listed above standard deviations in table. Superscripts denote significant differences.

Table 7. ADIS-P/C Social Phobia items used in factor analyses

Item Number	Item Description	ADIS Items Included
1	School Evaluative	1. Answering questions in class 2. Oral reports or reading out loud 3. Asking the teacher a question or asking for help 4. Taking tests 5. Writing on the chalkboard
2	Group Evaluative	6. Working or playing with a group 7. Gym class 8. Walking in the hallways or standing at his/her locker 10. Using school or public bathrooms 11. Eating in front of others
3	Meetings	12. Meetings, such as girl or boy scouts, or team meetings
4	Interpersonal	9. Starting or joining in on a conversation 13. Answering or talking on the telephone 15. Inviting a friend to get together
5	Meeting New People	16. Speaking to adults (e.g., store clerks, waiters, principal) 17. Speaking to new or unfamiliar people (strangers)
6	Social Phobia-Performance	14. Musical or athletic performances
7	Self-Concept and Appearance	18. Attending dances, parties, or activity nights 19. Having a picture taken (e.g., for the yearbook) 20. Dating
8	Assertion	21. Being asked to do something that he/she doesn't really want to do but to which he/she can't say no. For example, if someone wants to borrow his/her homework or favorite toy, is it hard for him/her to say no? 22. Having someone do something to him/her that he/she does not like but can't tell them to stop. For example, if someone is teasing him/her, is it really hard for him/her to say stop?

Table 8. ADIS-C/P GAD items used for factor analysis

Item Number	Item Description	ADIS Items Included
1	School	1. School (e.g., starting school, classwork, grades, homework)
2	Performance	2. Performance (e.g., being good enough at things such as sports, dance, art)
3	Social	3. Social or Interpersonal (e.g., making friends, impressions, appearance)
4	Little things	4. Little things (e.g., things that happened in the past, saying the wrong thing)
5	Perfectionism	5. Perfectionism (e.g., being on time, keeping schedules)
6	Health	6. Health (child) 7. Health (significant others)
7	Family	8. Family (divorce, finances)
8	World	9. Things going on in the world (e.g., war; crime; community; local and world affairs; floods, hurricanes, tornadoes)

Table 9. Exploratory factor analysis of ADIS-P GAD and Social Phobia items

Items	Principal components	
	Factor 1	Factor 2
Social 1-School Evaluative	<b>.69</b>	.11
Social 2-Group Evaluative	<b>.55</b>	-.16
Social 3-Meetings	<b>.42</b>	-.21
Social 4-Interpersonal	<b>.64</b>	-.35
Social 5-Meeting New People	<b>.66</b>	-.30
Social 6-Performances	<b>.46</b>	-.37
Social 7-Self-Concept and Appearance	<b>.29</b>	-.33
Social 8-Assertion	<b>.55</b>	.18
GAD 1-School	<b>.65</b>	.16
GAD 2-Performance	<b>.73</b>	-.07
GAD 3-Social	<b>.63</b>	-.24
GAD 4-Little Things	<b>.66</b>	.02
GAD 5-Perfectionism	<b>.53</b>	-.02
GAD 6-Health	<b>.54</b>	<b>.56</b>
GAD 7-Family	<b>.47</b>	<b>.52</b>
GAD 8-World	<b>.43</b>	<b>.56</b>

Table 10. Exploratory factor analysis of ADIS-P GAD and Social Phobia items

Items	Principal components	
	Factor 1	Factor 2
Social 1-School Evaluative	<b>.75</b>	.14
Social 2-Group Evaluative	<b>.63</b>	.37
Social 3-Meetings	<b>.45</b>	.17
Social 4-Interpersonal	<b>.66</b>	.26
Social 5-Meeting New People	<b>.70</b>	.13
Social 6-Performances	<b>.59</b>	<b>.42</b>
Social 7-Self-Concept and Appearance	<b>.43</b>	.23
Social 8-Assertion	<b>.69</b>	.16
GAD 1-School	<b>.67</b>	-.18
GAD 2-Performance	<b>.60</b>	.10
GAD 3-Social	<b>.61</b>	-.10
GAD 4-Little Things	<b>.69</b>	-.05
GAD 5-Perfectionism	<b>.61</b>	-.23
GAD 6-Health	<b>.70</b>	<b>-.41</b>
GAD 7-Family	<b>.61</b>	<b>-.53</b>
GAD 8-World	<b>.55</b>	<b>-.40</b>

Table 11. Exploratory factor analysis of ADIS-C GAD and Social Phobia items for children only.

Items	Principal components	
	Factor 1	Factor 2
Social 1-School Evaluative	<b>.79</b>	-.02
Social 2-Group Evaluative	<b>.59</b>	-.22
Social 3-Meetings	<b>.44</b>	<b>.42</b>
Social 4-Interpersonal	<b>.71</b>	.13
Social 5-Meeting New People	<b>.65</b>	.08
Social 6-Performances	<b>.56</b>	-.13
Social 7-Self-Concept and Appearance	.34	.54
Social 8-Assertion	<b>.67</b>	.12
GAD 1-School	<b>.68</b>	-.19
GAD 2-Performance	<b>.64</b>	-.37
GAD 3-Social	<b>.58</b>	-.26
GAD 4-Little Things	<b>.74</b>	.03
GAD 5-Perfectionism	<b>.63</b>	<b>-.43</b>
GAD 6-Health	<b>.70</b>	.09
GAD 7-Family	<b>.67</b>	.13
GAD 8-World	<b>.53</b>	<b>.46</b>

Table 12. Exploratory factor analysis of ADIS-P GAD and Social Phobia items for children only.

Items	Principal components			
	Factor 1	Factor 2	Factor 3	Factor 4
Social 1-School Evaluative	<b>.70</b>	.04	-.09	.09
Social 2-Group Evaluative	<b>.59</b>	.24	.14	-.26
Social 3-Meetings	.27	<b>.50</b>	-.20	<b>.64</b>
Social 4-Interpersonal	<b>.63</b>	<b>.44</b>	.04	-.04
Social 5-Meeting New People	<b>.59</b>	.38	-.15	.02
Social 6-Performances	<b>.44</b>	.31	<b>-.46</b>	<b>-.41</b>
Social 7-Self-Concept/Appearance	.20	.06	<b>.70</b>	-.16
Social 8-Assertion	<b>.59</b>	.02	.13	-.09
GAD 1-School	<b>.70</b>	-.14	-.07	-.08
GAD 2-Performance	<b>.71</b>	-.00	-.00	-.00
GAD 3-Social	<b>.61</b>	.15	.13	.08
GAD 4-Little Things	<b>.63</b>	-.27	.19	-.28
GAD 5-Perfectionism	<b>.49</b>	-.08	<b>.44</b>	.37
GAD 6-Health	<b>.56</b>	<b>-.50</b>	-.30	.13
GAD 7-Family	<b>.52</b>	<b>-.55</b>	-.25	-.05
GAD 8-World	<b>.47</b>	<b>-.41</b>	.05	.35



Table 13. Exploratory factor analysis of ADIS-P GAD and Social Phobia items for adolescents only

Items	Principal components		
	Factor 1	Factor 2	Factor 3
Social 1-School Evaluative	<b>.67</b>	-.12	-.38
Social 2-Group Evaluative	<b>.62</b>	<b>-.44</b>	.18
Social 3-Meetings	<b>.49</b>	.14	<b>.49</b>
Social 4-Interpersonal	<b>.66</b>	-.38	.11
Social 5-Meeting New People	<b>.66</b>	-.29	.14
Social 6-Performances	<b>.57</b>	-.02	-.01
Social 7-Self-Concept/Appearance	<b>.42</b>	-.31	.31
Social 8-Assertion	<b>.60</b>	-.01	<b>-.63</b>
GAD 1-School	<b>.69</b>	.07	-.39
GAD 2-Performance	<b>.75</b>	.09	-.03
GAD 3-Social	<b>.81</b>	-.24	.07
GAD 4-Little Things	<b>.76</b>	-.05	.07
GAD 5-Perfectionism	<b>.58</b>	.13	.04
GAD 6-Health	<b>.57</b>	<b>.59</b>	-.02
GAD 7-Family	<b>.56</b>	<b>.55</b>	.15
GAD 8-World	<b>.40</b>	<b>.65</b>	.16

Table 14. Exploratory factor analysis of ADIS-C GAD and Social Phobia items for adolescents only

Items	Principal components	
	Factor 1	Factor 2
Social 1-School Evaluative	<b>.59</b>	.05
Social 2-Group Evaluative	<b>.71</b>	-.33
Social 3-Meetings	<b>.51</b>	.28
Social 4-Interpersonal	<b>.59</b>	-.28
Social 5-Meeting New People	<b>.73</b>	.16
Social 6-Performances	<b>.58</b>	<b>-.61</b>
Social 7-Self-Concept and Appearance	<b>.58</b>	-.28
Social 8-Assertion	<b>.66</b>	-.08
GAD 1-School	<b>.64</b>	.36
GAD 2-Performance	<b>.54</b>	-.37
GAD 3-Social	<b>.68</b>	-.15
GAD 4-Little Things	<b>.60</b>	-.24
GAD 5-Perfectionism	<b>.52</b>	.26
GAD 6-Health	<b>.66</b>	<b>.40</b>
GAD 7-Family	<b>.51</b>	<b>.49</b>
GAD 8-World	<b>.68</b>	.38

Table 15. Exploratory factor analysis of ADIS-P GAD and Social Phobia items for boys only

Items	Principal components	
	Factor 1	Factor 2
Social 1-School Evaluative	<b>.68</b>	.11
Social 2-Group Evaluative	<b>.55</b>	-.16
Social 3-Meetings	<b>.42</b>	-.21
Social 4-Interpersonal	<b>.64</b>	-.35
Social 5-Meeting New People	<b>.66</b>	-.30
Social 6-Performances	<b>.46</b>	-.37
Social 7-Self-Concept and Appearance	.29	-.33
Social 8-Assertion	<b>.55</b>	.18
GAD 1-School	<b>.65</b>	.16
GAD 2-Performance	<b>.73</b>	-.07
GAD 3-Social	<b>.63</b>	-.24
GAD 4-Little Things	<b>.66</b>	.02
GAD 5-Perfectionism	<b>.53</b>	-.02
GAD 6-Health	<b>.54</b>	<b>.56</b>
GAD 7-Family	<b>.47</b>	<b>.52</b>
GAD 8-World	<b>.43</b>	<b>.56</b>

Table 16. Exploratory factor analysis of ADIS-C GAD and Social Phobia items for boys only

Items	Principal Component
Social 1-School Evaluative	.71
Social 2-Group Evaluative	.58
Social 3-Meetings	.53
Social 4-Interpersonal	.69
Social 5-Meeting New People	.66
Social 6-Performances	.58
Social 7-Self-Concept and Appearance	.43
Social 8-Assertion	.65
GAD 1-School	.71
GAD 2-Performance	.62
GAD 3-Social	.60
GAD 4-Little Things	.69
GAD 5-Perfectionism	.53
GAD 6-Health	.70
GAD 7-Family	.60
GAD 8-World	.60

Table 17. Exploratory factor analysis of ADIS-C GAD and Social Phobia items for girls only

Items	Principal components			
	Factor 1	Factor 2	Factor 3	Factor 4
Social 1-School Evaluative	<b>.78</b>	.29	.19	-.18
Social 2-Group Evaluative	<b>.68</b>	.23	-.05	-.07
Social 3-Meetings	.31	.38	<b>.56</b>	<b>.43</b>
Social 4-Interpersonal	<b>.63</b>	.20	.26	<b>-.52</b>
Social 5-Meeting New People	<b>.76</b>	.30	.04	.05
Social 6-Performances	<b>.60</b>	.22	<b>-.43</b>	.10
Social 7-Self-Concept/Appearance	<b>.44</b>	.09	-.39	<b>-.49</b>
Social 8-Assertion	<b>.72</b>	.32	.22	-.09
GAD 1-School	<b>.62</b>	<b>-.47</b>	.22	.13
GAD 2-Performance	<b>.60</b>	.14	<b>-.45</b>	<b>.40</b>
GAD 3-Social	<b>.64</b>	.10	-.13	.34
GAD 4-Little Things	<b>.70</b>	-.14	<b>-.43</b>	.06
GAD 5-Perfectionism	<b>.72</b>	-.24	.27	.11
GAD 6-Health	<b>.71</b>	<b>-.44</b>	.12	-.20
GAD 7-Family	<b>.65</b>	<b>-.49</b>	.03	.00
GAD 8-World	<b>.48</b>	<b>-.41</b>	.02	.09

Table 18. Exploratory factor analysis of ADIS-P GAD and Social Phobia items for girls only

Items	Principal components			
	Factor 1	Factor 2	Factor 3	Factor 4
Social 1-School Evaluative	<b>.70</b>	.14	-.18	<b>-.44</b>
Social 2-Group Evaluative	<b>.64</b>	<b>.43</b>	-.09	.02
Social 3-Meetings	.29	.26	<b>.68</b>	.26
Social 4-Interpersonal	<b>.64</b>	<b>.44</b>	.25	.11
Social 5-Meeting New People	<b>.56</b>	.39	.33	-.39
Social 6-Performances	<b>.56</b>	.10	.21	.26
Social 7-Self-Concept/Appearance	.34	<b>.40</b>	<b>-.43</b>	-.01
Social 8-Assertion	<b>.64</b>	.18	-.32	-.10
GAD 1-School	<b>.76</b>	-.10	-.21	.13
GAD 2-Performance	<b>.74</b>	-.11	.07	.29
GAD 3-Social	<b>.76</b>	.01	-.01	.04
GAD 4-Little Things	<b>.70</b>	-.13	-.17	-.07
GAD 5-Perfectionism	<b>.48</b>	-.30	-.29	<b>.58</b>
GAD 6-Health	<b>.55</b>	<b>-.58</b>	.30	-.20
GAD 7-Family	<b>.60</b>	<b>-.57</b>	.13	-.10
GAD 8-World	<b>.43</b>	<b>-.50</b>	.02	-.25

Table 19. Summary of hypotheses and associated findings from ANOVA analyses.\*

<b>Hypothesis</b>	<b>Hypothesized relationship</b>	<b>Supportive evidence</b>
<b>Hypothesis 1a: SAD</b>		
Social anxiety	SAD>GAD	None
Social functioning	SAD<GAD	None
Family expressiveness	SAD<GAD	None
Behavioral inhibition	SAD>GAD	Adolescents: Childhood Inhibition Inventory
<b>Hypothesis 1b: GAD</b>		
Worry	GAD>SAD	Overall: Anxious coping (MASC), Harm avoidance (MASC) Children: Anxious coping (MASC), Harm avoidance (MASC) Boys: Anxious coping (MASC), Harm avoidance (MASC)
Physiological symptoms	GAD>SAD	Adolescents: Tense/Restless (MASC), Physical symptoms (MASC), Somatic Symptoms (TRF; Reverse direction)
School functioning	GAD<SAD	None
Anxiety sensitivity	GAD>SAD	None
<b>Hypothesis 2: Comorbid</b>		
Temperament	COMORBID worse than GAD	Overall: Childhood Inhibition Inventory Adolescents: Childhood Inhibition Inventory
	COMORBID worse than SAD	Overall: Childhood Inhibition Inventory Children: Childhood Inhibition Inventory Boys: Childhood Inhibition Inventory
Psychosocial	COMORBID worse than GAD	Overall: Performing in Public (MASC), Social Anxiety (MASC) Children: Tense/Restless (MASC), Humiliation/Rejection (MASC), Performing in Public (MASC), Social Anxiety (MASC), Anxiety Disorders Index (MASC), Child Depression

		Inventory  Adolescents: Tense/Restless (MASC), Humiliation/Rejection (MASC), Performing in Public (MASC), Social Anxiety (MASC), Anxiety Disorders Index (MASC)  Boys: Performing in Public (MASC), Child Depression Inventory
	COMORBID worse than SAD	Overall: Tense/Restless (MASC), Physical Symptoms (MASC), Perfectionism (MASC), Anxious Coping (MASC), Separation/Panic (MASC), Anxiety Disorders Index (MASC), MASC Total, Child Depression Inventory  Children: Tense/Restless (MASC), Perfectionism (MASC), Anxious Coping (MASC), Harm Avoidance (MASC), Humiliation/Rejection (MASC), Anxiety Disorders Index (MASC)  Adolescents: Tense/Restless (MASC), Physical Symptoms (MASC)  Boys: Harm Avoidance (MASC), Anxious Coping (MASC), MASC Total, Somatic (CBCL)
Family	COMORBID worse than GAD	None
	COMORBID worse than SAD	None

\*Discriminant function and cluster analyses did not yield any support for the study hypotheses.