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Anxious Solitude and Clinical Disorder in Middle Childhood: Bridging Developmental and Clinical Approaches to Childhood Social Anxiety

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Abstract

It was hypothesized that children identified by their peers at school as anxious solitary would report more symptoms of social anxiety disorder on a self report questionnaire and, on the basis of child and parent clinical interviews, receive more diagnoses of social anxiety disorder and additional anxiety and mood disorders. Participants were 192 children drawn from a community sample of 688 children attending public elementary schools. Half of these children were selected because they were identified as anxious solitary by peers and the other half were demographically-matched controls. 192 children provided self reports of social anxiety disorder symptoms on a questionnaire, and 76 of these children and their parent participated in clinical interviews. Results indicate that children identified by their peers as anxious solitary in the fall of 4th grade, compared to control children, were significantly more likely to receive diagnoses of social anxiety disorder, specific phobia, and selective mutism based on parent clinical interviews. Additionally, there was a tendency for these children to be diagnosed with generalized anxiety disorder and post traumatic stress disorder based on parent clinical interviews. Furthermore, children who had been identified as anxious solitary at any time in the 3rd or 4th grades were more likely than control children to report symptoms of social anxiety disorder that fell in the clinical range and to receive diagnoses of social anxiety disorder and dysthymia (both trends) and major depression (a significant effect) according to parental clinical interview.

Keywords

Social anxiety disorder; Social withdrawal; Anxious solitude; Shyness; Peer relations; Social behavior; School adjustment

Childhood social anxiety has received significant research attention in both developmental and clinical psychology in recent decades, yet differences in methodology and

conceptualization have impeded cross-fertilization among these sub-disciplines. This investigation is a preliminary effort to empirically examine rates of clinical disorder among children identified as anxious solitary using developmental criteria so as to facilitate communication across sub-disciplines. Work of this nature, which strives to bridge developmental and clinical approaches to childhood social anxiety, is needed to understand the spectrum of anxiety difficulties present in community samples and the relation between this variability and clinical disorder. Ultimately, examining connections between children whose social anxiety deviates from developmental norms and those who are diagnosed with social anxiety disorder will contribute to understanding of how children either develop disorder or function adaptively despite the presence of risk factors. For instance, developmental research has indicated that peer relations difficulties in anxious solitary children predict more stable anxious solitary behaviors and symptoms of depression over the course of middle childhood and early adolescence (Gazelle and Ladd 2003; Gazelle and Rudolph 2004). If there is substantial overlap between anxious solitude and social anxiety disorder, then it will be important to examine the role such peer relations difficulties may play in potentially triggering the transition from sub-clinical symptoms of social anxiety to clinically-significant disorder with accompanying life impairment.

Anxious Solitude and Social Anxiety Disorder: Common and Contrasting Definitional Criteria and Core States

Children are identified as anxious solitary when they exhibit elevated rates of solitary on looking behavior (watching peers' play without joining), shyness, social hesitancy, and verbal inhibition when among familiar peers (Coplan et al. 1994; Gazelle and Ladd 2003) (anxious solitary children may also display similar behavior with unfamiliar peers, see Gazelle et al. 2005). These behaviors and interaction patterns are indicative of social anxiety (Coplan et al. 1994). Anxious solitary children are conceptualized as wanting to interact with their peers but being blocked by fear that they will perform poorly and/or be poorly received by peers (social evaluative concerns) (Asendorpf 1990a). Various developmental researchers use slightly different terms to refer to anxious solitary children, including 'anxious withdrawn' and 'shy/withdrawn' (e.g., Rubin et al. 2006). These terms are synonymous. We prefer the term 'anxious solitary' because it is unambiguously descriptive in identifying target children as those who play alone at elevated rates due to social anxiety.

Because anxious solitude and social anxiety disorder share the core emotional state of social anxiety, many researchers have assumed that anxious solitary children ought to be at risk for or demonstrate elevated rates of social anxiety disorder (e.g., Rubin and Burgess 2001). However, anxious solitude and social anxiety disorder have not been assessed within a single study because the appropriate methodologies are typically used by researchers from separate research traditions. Although clinical symptom questionnaires are sometimes employed in developmental studies, the use of clinical interviews to determine rates of diagnosis is especially rare. The current investigation employs not only a strong developmental method to identify anxious solitary children (peer behavioral nominations), but also both a clinical symptom questionnaire designed to be particularly sensitive to social anxiety disorder and a

structured clinical interview designed to be particularly sensitive to anxiety disorders more broadly.

Although anxious solitude and social anxiety disorder share the core emotional state of social anxiety, additional similarities and differences between the two constructs are relatively nuanced. The construct of anxious solitude emphasizes behavior. This is apparent in the methods most commonly used to identify anxious solitary children. Anxious solitary children are typically identified by peer behavioral nominations (as in the current investigation) or via behavioral observation of children during free play. Both of these methods require that a child demonstrate observable manifestations of social anxiety in their behavior, such as those specified in the definition of this construct (e.g., onlooking solitary behavior, verbal inhibition, hesitancy, etc.). The hypothetical child who feels anxious in social situations but does not manifest any behavioral signs would not qualify as anxious solitary. Notably, self-reports of anxious solitude are rarely used in the developmental literature, in part because although self-reports of anxious solitude are significantly related to information from other informants, the strength of this association is modest (Spangler and Gazelle 2009). There are many reasons why this may be so. For instance, self-ratings imply a comparison of the self to others (usually similar others or peers). A child who has little peer interaction may not have a normative basis for comparison. Reasons that self-reports often differ from the reports of social partners that are non-specific to social anxiety also apply. For instance, children and adults alike often attribute their own behavior to situational factors whereas they attribute others' behavior to personal character (the fundamental attribution bias, see Pronin et al. 2002).

In contrast, clinical diagnoses of social anxiety disorder (a.k.a. social phobia¹) requires subjective distress as reported by the child and/or their parent. Specifically, diagnosis of social anxiety disorder in childhood requires that (1) when in a social situation, the child is either afraid or worries that he or she will do something embarrassing or that others will think is stupid or will laugh at (affect, subjective criteria), (2) at least one specific social situation is either avoided (behavioral criteria) or endured with distress (subjective criteria), and (3) this problem interferes with the child's life (e.g., friendships, activities at school or home, keeps child from doing things s/he wants to do) at least some of the time (American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision 2000*). Diagnostic criteria also specify that the child must be anxious about interactions with other children, not just adults. Therefore, although anxious solitude and social anxiety disorder converge in identifying children who experience social anxiety among peers, each construct is defined in ways that privilege certain aspects of the phenomenology of social anxiety (i.e., behavior versus subjective distress). Whereas anxious solitude cannot be identified without behavioral evidence, social anxiety disorder can be diagnosed in the absence of behavioral avoidance if subjective distress is present. Despite these differences in emphasis, there are nonetheless commonalities in the assessment of both

¹The *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision 2000*), lists both social phobia and social anxiety disorder as acceptable titles of the same disorder. The term social phobia, however, may imply a similarity to specific phobias and underestimate the severity of the disorder (Schneier et al. 1992).

constructs. For instance, behaviors characteristic of anxious solitude (e.g., solitary onlooking behavior) could be captured in the ‘avoidance of social situations’ or ‘interference’ criteria used in clinical diagnosis. Because children are often not at liberty to avoid social situations connected with schooling altogether, such behavior can be seen as avoidance demonstrated within the confines of an inescapable social situation. However, it is also possible that some anxious solitary children demonstrate the behaviors that qualify them for this developmental classification without meeting the interference criteria necessary for clinical diagnosis. Specifically, anxious solitary children differ in the degree of impairment they experience with peer relations, with some children experiencing chronic peer mistreatment whereas others do not experience mistreatment and enjoy normative levels of friendship and peer acceptance (Gazelle 2008; Gazelle and Ladd 2003). Thus, there is reason to expect a good deal of overlap among children identified as anxious solitary and those diagnosed with social anxiety disorder, but it is also expected that there will be children who meet criteria for one classification but not the other. Specifically, it is expected that there will be children who report the subjective distress necessary to qualify them for social anxiety disorder but do not display behaviors required to be identified as anxious solitary, as well as children who display anxious solitary behavior but do not experience sufficient interference with social relationships to qualify for social anxiety disorder.

Behavioral Inhibition and Disorder

Although there is no extant empirical work on the co-occurrence of anxious solitude and social anxiety disorder, there are a number of recent empirical studies that have examined overlap between the developmental classification of behavioral inhibition and social anxiety disorder as well as additional anxiety and mood disorders. Behavioral inhibition is an early childhood temperament classification that is believed to be a risk factor for later anxious solitude in middle childhood (Calkins and Fox 2002). Behavioral inhibition is defined as wariness towards unfamiliar and challenging objects, people, and situations (Kagan 1997). It is typically identified when toddlers demonstrate prolonged latency to approach and interact with novel people or objects and show fear in these situations (e.g., crying, freezing, clinging to their mothers, etc.). This temperament is believed to originate, at least in part, in a low threshold for stimulation in the amygdala and connected structures in the developing brain (Kagan et al. 1987). However, behaviorally inhibited toddlers do not always become anxious solitary children (Fox et al. 2001; Ollendick and Hirshfeld-Becker 2002). Recent research has indicated that caregivers’ responses to inhibited children are predictive of the stability of anxious tendencies over time (Early et al. 2002; Rubin et al. 2002, 1997). Furthermore, evidence suggests stronger associations between anxious solitude in early grade school and children’s concurrent peer relations than with earlier inhibition in toddlerhood (Asendorpf 1990b).

Studies examining anxiety and mood disorders in behaviorally inhibited children support a linkage between these classifications, although studies differ in whether they support this specific linkage with social anxiety disorder only (Hirshfeld-Becker et al. 2007), or rather linkages with a broader spectrum of anxiety and mood disorders (Biederman et al. 2001, 1993, 1990; Caspi et al. 1996; Hayward et al. 1998; Hirshfeld et al. 1992; Muris et al. 2003; Prior et al. 2000; Schwartz et al. 1999). In one intervention study which focused solely on

parental coaching of inhibited toddlers, rates of parent-rated social anxiety disorder declined significantly after intervention, but toddlers persisted in demonstrating observed inhibited behavior nonetheless (Rapee et al. 2005). Thus, although there is evidence for linkages between inhibited temperament and anxiety disorder, these conditions appear differentially responsive to brief intervention. Because behavioral inhibition is conceptualized as a risk factor for later anxious solitude, these findings suggest that links between anxious solitude and anxiety and mood disorders may also exist, but empirical work is needed to establish such linkages.

Anxious Solitude, Social Anxiety Disorder, and Comorbid Disorders in Childhood

Although anxious solitary children have demonstrated elevated symptoms on broad-band measures of internalizing problems (Hymel et al. 1990; Morison and Masten 1991; Rubin and Burgess 2001; Rubin et al. 1995), and depressive symptom checklists (Gazelle and Ladd 2003; Gazelle and Rudolph 2004; Rubin and Mills 1988), it is unclear what rates of clinically significant disorder may exist in this population. This investigation not only tests the assumption that these children demonstrate elevated rates of social anxiety disorder, but also examines other anxiety disorders. It is reasonable to expect that anxious solitary children might exhibit multiple anxiety disorders because (1) children with social anxiety disorder display elevated rates of other anxiety disorders (for a review see Beidel and Turner 2007), and (2) comorbidity among anxiety disorders in childhood is common (for a review see Albano and Krain 2005).

Likewise, it was expected that anxious solitary children would exhibit elevated rates of mood disorders. Because there is evidence that the onset of anxiety often precedes the onset of depression in childhood (Cole et al. 1998), it was expected that children who have a history of anxious solitude would be at elevated risk for depression diagnoses even when they do not demonstrate current anxious solitude.

Additional speech, sleep, and elimination disorders are also examined. Elevation in selective mutism is a possibility because this disorder demonstrates elevated comorbidity with social anxiety disorder in childhood (Beidel and Turner 2007). However, elevation in the remaining disorders was not expected.

Child gender was not expected to qualify differences among anxious solitary and comparison children in rates of disorder. However, main effect sex differences were expected such that girls would demonstrate more internalizing disorders and boys more externalizing disorders (Albano and Krain 2005).

Method

Participants

Participants who provided self-reports on the *Social Phobia and Anxiety Inventory for Children* (SPAI-C, Beidel et al. 1998) were 192 out of 195 (99%) fourth-grade children with informed parental consent involved in an ongoing longitudinal project. A subset of 76 (39%)

of these children and one of their parents also participated in a clinical interview—the *Anxiety Disorders Interview Schedule—Child and Parent Versions* (ADIS-C/P, Silverman and Albano 1996). All participants were drawn from an initial peer sociometric screening sample of 688 children attending one of 43 third-grade classrooms in seven public elementary schools in a suburban to rural region of the Southeastern United States. This screening sample represents 80% (688/856) of children in these classrooms. Girls and boys were approximately equally represented (51.5% female ($n=354$), 48.5% male ($n=334$)) in the screening sample, and the sample was diverse in regard to race/ethnicity (62% European American, 20% African American, 16% Latino, and 2% Asian American). The screening sample was also diverse in regard to socioeconomic status, with 30% of children receiving free or reduced school lunch.

Children were selected for the longitudinal sample if they scored at or above 1 *SD* on a peer sociometric composite of anxious solitude (description of this composite appears below) in fall or spring of third grade. Approximately an equal number of control children were also selected into the longitudinal sample. Control children were selected on the basis of scoring below 1 *SD* on anxious solitude and being the closest demographic match for selected anxious solitary children within their classrooms in regard to sex, ethnicity, age, and free- or reduced- school lunch status. In total, 195 children were selected into the longitudinal sample by fourth grade. One-hundred-sixty-three of these children were selected into the longitudinal sample based on their time 1 (fall of third grade) scores, and an additional 32 children were added at time 3 (fall of fourth grade) based on their time 2 scores (spring of third grade). Thus, children selected into the longitudinal sample at the first assessment were retained over time and additional children from the original screening sample were added to the longitudinal sample in the fourth grade if they scored above threshold for anxious solitude or met criteria for being a matched control for newly added children in the spring of third grade at the second assessment. All longitudinal children received the same assessments in fourth grade regardless of the time point at which they were added to the longitudinal sample.

Children selected for the longitudinal study versus non-selected children from the screening sample did not differ in regard to sex (selected 55% female, non-selected 50% female, $\chi^2 = 1.68$, *ns*), age at the outset of the study (selected $M = 8.70$ years, $SD = 0.53$, non-selected $M = 8.65$ years, $SD = 0.48$, $t = 1.05$, *ns*), or in the rate at which they received free or reduced lunch (selected 31%, non-selected 29%, $\chi^2 = 0.29$, *ns*). The parent-reported race/ethnicity of the selected sample is diverse and resembles the composition of the screening sample except that significantly more Latino ($\chi^2 = 11.18$, $p < 0.001$) and significantly fewer African American children ($\chi^2 = 6.02$, $p < 0.05$) were selected (selected vs. non-selected: 61% vs. 62% European American, 24% vs. 13% Latino, 14% vs. 23% African American, and 2% vs. 2% Asian American). Because children were selected on the basis of elevated anxious solitude scores (or having demographics that matched those of children with elevated anxious solitude scores), demographic discrepancies between the screening and selected samples are a result of differential prevalence of elevated anxious solitude among demographic groups in this sample. Ethnic differences were not hypothesized and are not necessarily related to culture, although we cannot rule out this possibility. The tendency

towards elevated anxious solitude among Latino children may be related to stressful economic or acculturation conditions, including language difficulties.

All longitudinal children were invited to participate in the clinical study in 4th grade. Longitudinal children who agreed versus did not agree to participate in the clinical study did not differ in regard to sex (participant: 51% female, non-participant: 58% female, $\chi^2 = 0.83$, *ns*), or age at the outset of the study (participant $M = 8.72$ years, $SD = 0.41$, non-participant $M = 8.68$ years, $SD = 0.60$, $t = 0.46$, *ns*). However, clinical participants versus non-participants were significantly less likely to receive free or reduced lunch (participant 21%, non-participant 38%, $\chi^2 = 6.06$, $p < 0.05$). Because this is a proxy for socioeconomic status (SES), it suggests that clinical participants versus non-participants were of higher SES. The race/ethnicity of the clinical participant sample is diverse relative to other studies of this nature (e.g., 6–10% minority representation in Grills and Ollendick 2003; Verduin and Kendall 2008), but the parents of significantly more European American ($\chi^2 = 13.02$, $p < 0.001$) and significantly fewer Latino children ($\chi^2 = 26.65$, $p < 0.001$) agreed versus did not agree to participate in the clinical study relative to their representations in the longitudinal sample (participant vs. non-participant: 76% vs. 50% European American, 4% vs. 36% Latino, 18% vs. 12% African American, and 1% vs. 2% Asian American). These differences emerged despite efforts to encourage participation by ethnic minority families by providing Spanish-language interpreters and home interviews when needed. The sample size and analytic methods used with the clinical subset of the data were not conducive to statistically controlling for the obtained demographic patterns, and therefore they are acknowledged as a limitation to the clinical portion of the study. Nonetheless, even with these demographic patterns in parental agreement to participate in the clinical interview, this study benefits from a sample that is more diverse than many of those in similar types of investigations.

Mothers completed the ADIS-P for 85% ($n=65$) of children, and fathers for the remaining 15% ($n=11$). For children whose mothers versus fathers completed the clinical interview, no significant differences were found in parental-report social phobia diagnoses or interference scores, anxious solitude, or SPAI-C scores.

Procedure

The initial peer sociometric screening was conducted in children's classrooms in the fall of third grade (time 1), and was repeated in each subsequent semester (spring of third grade, fall of fourth grade, and spring of fourth grade or times 2, 3, and 4 respectively). The SPAI-C was administered at school in the fall and spring of fourth grade (times 3 and 4). Children completed the SPAI-C and additional self-report questionnaires not relevant to the current report in small groups (5 children or less) and were assisted by a research assistant who explained how to fill out the questionnaire and read each item aloud while children marked their answers on their individual sheets.

The parents of all longitudinal children were invited to participate in the additional clinical interview with their child at the local university (or at their home if they preferred $n=4$ or 5%) via phone, mail, and letters that children brought home from school in the spring of fourth grade and summer subsequent to fourth grade. The protocol was the same for both lab

and home interviews. Trained doctoral-level clinical graduate students administered the ADIS-C/P. First, the parent was interviewed while an additional research assistant helped the child to complete self-report questionnaires, and then the child was interviewed while the parent completed questionnaires. Parent-child dyads then engaged in a videotaped 15-minute interaction that is not relevant to the current report.

Measures

Anxious solitude—The anxious solitude composite is comprised of three nominations: Peers nominate classmates who (1) "...act really shy around other kids. They seem to be nervous or afraid to be around other kids and they don't talk much. They often play alone at recess;" (2) "... watch what other kids are doing but don't join in. At recess they watch other kids playing but they play by themselves;" and (3) "...are very quiet. They don't have much to say to other kids." These nominations are adapted from previous investigations (e.g., Gazelle and Ladd 2003). This composite demonstrated adequate reliability at each time point ($\alpha = 0.76\text{--}0.88$) and 6-month stability ($r_{\text{within grades}} = 0.72\text{--}0.78$, $p < 0.001$; $r_{\text{between grades}} = 0.66$, $p < 0.001$).

Peer nominations for anxious solitude (and other constructs not relevant to the current investigation) were administered simultaneously to participating children in each classroom. Each nomination was read aloud to the class and then children selected classmates' names on their individual class rosters. Nominations were unlimited and cross-sex nominations were allowed because these procedures result in superior psychometric properties (Foster et al. 1986; Terry and Coie 1991). Children's scores on each item were equal to the total number of nominations they received from classmates. These scores were then standardized by classroom to control for variation in classroom size.

Symptoms of social anxiety disorder—The Social Phobia and Anxiety Inventory for Children (SPAI-C, Beidel et al. 1998) is a 26-item self-report measure of social anxiety of potential clinical significance. On a 12-item component of the scale, children reported their level of social anxiety and distress in different contexts (e.g., with familiar peers, unfamiliar peers, and adults; "I feel scared when I meet new kids"). The remaining 14 items assessed social anxiety in the following social tasks: assertiveness/general conversation, traditional social encounters, and public performance (Beidel et al. 1995). Children responded on a scale of 0 (never or hardly ever) to 2 (most of the time, or always). In the current investigation the SPAI-C demonstrated high internal consistency (both fall and spring $\alpha s = 0.97$) and moderate stability from fall to spring ($r = 0.68$, $p < 0.001$), and has also demonstrated high two-week test-retest reliability in previous investigations $r = 0.86$ (Beidel et al. 1995). The total score is calculated as the sum of several sub-components and higher total scores indicate higher social anxiety, with a score of 18 or more indicating possible social anxiety disorder and the need for a clinical interview for more detailed assessment (Beidel et al. 1998). Using this cut-off, the SPAI-C shows generally good sensitivity, as 61.5% of youngsters ages 13 to 17 years from a community sample diagnosed on the ADIS-C/P (Silverman and Albano 1996) with social anxiety disorder also met the clinical cut-off on the SPAI-C (Inderbitzen-Nolan et al. 2004). This sensitivity compares favorably to another commonly used social anxiety measure, the Social Anxiety Scale for Adolescents (LaGreca

1998), which had a sensitivity of only 43.6% in this same study. However, high rates of social anxiety are often identified in community samples using the SPAI-C. For example, the proportion of children who met the SPAI-C cut-off for elevated symptoms of social anxiety disorder in community samples was 41% in Morris and Masia's (1998) sample of children ages 9 to 12 years ($n=277$) and 37% in Epkins' (2002) sample of children ages 8 to 12 years ($n=178$), suggesting that higher proportions of children are likely to score within the possible clinical range on the SPAI-C than would receive a diagnosis of social anxiety disorder based on a clinical interview.

Diagnoses—The Anxiety Disorders Interview Schedule-Child and Parent Versions (ADIS-C/P; Silverman and Albano 1996) is a semi-structured child interview based on DSM-IV diagnostic criteria. The interview was developed to provide differential diagnosis for child anxiety disorders (Silverman and Albano 1996) including social anxiety, separation anxiety, specific phobia, panic, generalized anxiety, and post traumatic stress disorders. Sections also assess mood disorders (dysthymia and major depressive disorder), externalizing disorders (attention deficit/hyperactivity (three subtypes), Conduct, and oppositional defiant disorders), and specific speech, elimination, and sleep disorders (selective mutism, enuresis, and sleep terror).

A diagnosis was made on the ADIS-P if the parent endorsed the minimum number of symptoms and functional impairment, as indicated by interference in home, school, and social domains (operationalized as an interference score of 4 or greater on a scale of 0 to 8, with 0 indicating 'not at all', 4 'some', and 8 'very, very much'); the same method was followed for child reports on the ADIS-C. To be diagnosed with social anxiety disorder the informant must indicate that (1) when in a social situation, the child is either afraid or worries that s/he will do something embarrassing or that others will think is stupid or will laugh at, (2) at least one specific social situation is either avoided or endured with distress, and (3) this problem interferes with the child's life (e.g., friendships, activities at school or home, keeps child from doing things s/he wants to do) at least 'some' (a score of 4 or greater). A composite diagnosis was also calculated according to the manual guidelines (Silverman and Albano 1996, p. 12): "If only one interview (either child or parent) yields a diagnosis, and the clinician's severity rating (CSR) for that diagnosis is 0–3, then child does not receive the diagnosis. If one or both interviews yield a diagnosis with a CSR of 4 or greater, then the child receives the diagnosis. If both interviews (child and parent) yield a diagnosis, then the child receives the diagnosis." The CSR is made on the same scale as child and parent interference ratings and reflects the clinician's judgment of all information gathered in the interviews.

The convergent validity of the ADIS-C/P is good; for example, children diagnosed with social anxiety disorder on the ADIS-C/P scored higher ($M=15.52$; $SD=6.29$) on the social anxiety subscale of the Multidimensional Anxiety Scale for Children (March 1997) than did children diagnosed with another anxiety disorder ($M=11.59$, 5.95 , $p<0.05$, Wood et al. 2002). The ADIS-C/P has also demonstrated good test-retest reliability in past investigations ($\kappa=0.72$ for social anxiety disorder for children 7 to 11 years for an interval of one to two weeks, Silverman et al. 2001).

In the present investigation, clinical interviewers were two clinical graduate students who achieved 100% agreement with the third author on diagnoses and CSRs prior to coding interviews and maintained reliability in subsequent periodic reliability checks. Nineteen percent of the child and parent interviews were viewed by a second coder in order to examine the inter-rater reliability of combined diagnoses and CSRs. Agreement was high (for parent-based diagnoses interclass correlation (ρ) = 0.93, child-based diagnoses ρ = 1.0, both parent- and child-based CSR ρ s = 0.91).

Because parent-child agreement is typically modest for assessments of child social anxiety (κ = 0.25 for the social anxiety disorder section in a clinical sample with the mean age of 10.69 years, Grills and Ollendick 2003), separate analysis of the individual parent- and child-report diagnoses and the composite diagnosis (which takes into account the clinician's assessment of both parent and child reports) was warranted. Overall, however, the ADIS-C/P has strong psychometric properties and is the primary diagnostic tool used in the majority of recent child anxiety clinical trials (Silverman et al. 2001).

Results

Analytic Plan

Analyses focus on correspondence between (1) anxious solitude classification and scores in the potential clinical range on the SPAI-C, (2) scores in the potential clinical range on the SPAI-C and diagnosis of social anxiety disorder, and (3) anxious solitude classification and diagnosis of social anxiety disorder and additional anxiety, mood, externalizing, speech, elimination, and sleep disorders. Two versions of anxious solitude classification were employed in analyses in order to capture the temporal nature of this variable and account for study design (i.e., the over-selection of children with high anxious solitude scores at both 3rd grade assessments). One version of the anxious solitude variable captures anxious solitude scores at one time point in 4th grade—proximal to 4th grade criterion assessments—and the other captures the history of anxious solitude scores at four time points throughout 3rd and 4th grade assessments (thus accounting for the over-selection of children high in anxious solitude in the study design). Fall rather than spring 4th grade anxious solitude scores were employed in the analyses based on 4th grade only because preliminary analyses indicated they were more predictive of diagnoses. Children who scored as anxious solitary in the fall of 4th grade (or at any time point in 3rd or 4th grade) were compared to all other children in the clinical sample because preliminary analyses indicated that that this comparison group yielded better differential diagnoses than an alternate version in which the comparison group was composed of only those children who never scored as anxious solitary at any time point (the decrease in sample size in this alternate comparison group was likely detrimental to analyses). It was also considered conceptually preferable to employ a comparison group that preserved variability in anxious solitude scores, as this is representative of the distribution found in community samples. Furthermore, if only children with very low anxious solitude scores had been selected this may have biased the control group in other ways (e.g., an overrepresentation of children who were behaviorally exuberant or demonstrated externalizing tendencies). Clinical diagnosis based on parent, child, and composite (parent, child, and clinician) criteria are examined separately. Chi-square tests are the primary means

of analyzing whether higher proportions of children in anxious solitary versus control groups meet criteria for classifications or diagnoses. Because hypotheses were clearly directional in many instances (anxious solitary children were expected to demonstrate higher rates of certain anxiety and mood disorders), directional significance levels were employed in corresponding tests (instances in which directional cutoffs were employed are systematically reported in the tables that follow).

Preliminary analyses were conducted to examine whether the sex by classification group interactions were present, but all interactions were non-significant and therefore are not reported. However, main effect sex differences in the prevalence of classifications and diagnoses are reported.

Anxious Solitude and Self-reported Symptoms of Social Anxiety Disorder on the SPAI-C

As hypothesized, results of chi-square analyses indicated that a significantly greater proportion of anxious solitary than control children self-reported symptoms of social anxiety disorder in both the fall (39.0% vs. 26.1% respectively) and spring (36.0% vs. 25.0% respectively) at or above the level considered to be of potential clinical significance (scores of 18 or above; see Table 1). However, this difference was only significant when the anxious solitary group was defined as those scoring as anxious solitary at any time point in 3rd or 4th grade (times 1–4). When the anxious solitary group was defined as those scoring as anxious solitary in the Fall of 4th grade (time 3) only, results were non-significant. Those children who qualified as anxious solitary at any time point in 3rd or 4th grade versus control children were approximately one and a half times more likely than control children (odds ratios: 1.44–1.49) to report symptoms of social anxiety disorder of potential clinical significance in the fall or spring of 4th grade.

Correspondence between the SPAI-C and Social Anxiety Disorder Diagnoses on the ADIS-C/P

Also consistent with expectations, children who self-reported symptoms of social anxiety disorder in the clinical range (18 or above) versus those in the clinical sample who scored below this cutoff were significantly more likely to meet diagnostic criteria for social anxiety disorder according to all ADIS informants: parent report (33.3% vs. 9.6% respectively), child self-report (37.5% vs. 15.4% respectively), and parent/child/clinician composite (41.7% vs. 21.2%; see Table 2). These results were only significant when fall rather than spring SPAI-C scores were employed (except that children scoring at or above versus below threshold on spring SPAI-C scores were significantly more likely to meet criteria for the child-report ADIS diagnosis of social anxiety disorder: 39.1% vs. 15.1%). These results indicate that children scoring at or above versus below the level of potential clinical significance on the SPAI-C are approximately two to three and a half times more likely (odds ratios: 1.97–3.47) to receive a diagnosis of social anxiety disorder on the ADIS, depending upon the diagnostic informant.

Anxious Solitude and Diagnoses on the ADIS-C/P

Given the focus on bridging (examining the extent of overlap for) developmental and clinical classifications, of primary interest is the next set of analyses that focus on comparing the

proportions of anxious solitary versus control children who met diagnostic criteria for social anxiety disorder as well as other anxiety, mood, externalizing, speech, elimination, and sleep disorders. First, these patterns are examined with the anxious solitary group defined as children who scored as anxious solitary in the fall of 4th grade. As hypothesized, anxious solitary versus control children were significantly more likely to meet diagnostic criteria for social anxiety disorder (30.0% vs. 12.5%), as well as specific phobia (15.0% vs. 3.6%) and selective mutism (5.0% vs. 0.0%; see Table 3). Results also revealed trends indicating that anxious solitary versus control children were somewhat more likely to meet diagnostic criteria for generalized anxiety disorder (15% vs. 5.4%) and post traumatic stress disorder (5.0% vs. 0.0%). Anxious solitary versus control children were approximately two and a half times more likely to receive a diagnosis of social anxiety disorder, four times as likely to receive a diagnosis of specific phobia, and two and three quarters times more likely to receive a diagnosis of generalized anxiety disorder (odds ratios: 2.40, 4.17, and 2.78 respectively; odds ratios could not be calculated for selective mutism and PTSD due to zero numerators). All of these patterns were significant when diagnoses were based upon parent reports, but not child reports. Similarly, because composite diagnoses reflected both parent and child report information, no composite diagnoses reached significance except for selective mutism. No significant differences emerged for any of the other disorders examined.

The specific pattern of comorbidity was as follows. Six anxious solitary children received diagnoses of social anxiety disorder. This was the only diagnosis for 2 children. Among the remaining 4 children, there were 3 additional diagnoses of generalized anxiety disorder, 2 additional diagnoses each of specific phobia and ADHD-I, and one additional diagnosis each of separation anxiety disorder, selective mutism, and post traumatic stress disorder. Three of these children demonstrated the most comorbidity with 3 to 4 diagnoses each. Thus, as expected, social anxiety disorder was the most common diagnosis for anxious solitary children and the most common comorbid diagnoses were additional anxiety disorders.

There were also three anxious solitary children who received diagnoses primarily for externalizing disorders. Among these children, there were 2 diagnoses each of oppositional defiant disorder and ADHD, and 1 diagnosis of specific phobia.

Peers did not appear able to distinguish between anxious solitary children with and without social anxiety disorder. Anxious solitary children with versus without social anxiety disorder did not differ in regard to degree of peer-reported anxious solitude ($F=70.51$, $p<0.001$; M difference = -0.50 , ns ; $M(SD) = 1.97 (0.57)$ vs. $2.47 (0.92)$). Yet, as expected, anxious solitary children with versus without social anxiety disorder demonstrated significantly more life interference according to parents ($F=34.91$, $p<0.001$; M difference = 5.26 , $p<0.001$; $M(SD) = 5.83 (1.33)$ vs. $0.57 (1.28)$). Although life interference was part of the diagnostic criteria for social anxiety disorder, and it is therefore not surprising that the two groups differ in this regard, the degree of difference in life interference between anxious solitary children with and without social anxiety disorder is remarkably large (on a scale of 0 to 8, 0 indicates 'not at all' and 6 'a lot').

These patterns were next examined with the anxious solitary group defined as children who scored as anxious solitary at any point in 3rd or 4th grade, in order to capture the over selection of anxious solitary children in the study design and allow for some fluctuation in anxious solitude scores over time. This doubled the size of the anxious solitary group (from $n=20$ to 40), and the large majority of these children had a history of anxious solitude in third grade (95%) even if they did not qualify as anxious solitary in fourth grade. Again, anxious solitary versus control children were twice as likely (odds ratio: 2.03) to receive a diagnosis of social anxiety disorder (22.5% vs. 11.1%) based on parent-report, although this pattern was reduced to marginal significance (see Table 4). However, anxious solitary versus control children demonstrated a pattern of elevated mood disorders that had not been evident with the previous set of analyses. Anxious solitary versus control children were more likely to receive a composite diagnosis for both dysthymia (5.0% vs. 0.0%, a marginally significant effect) and major depression (10.0% vs. 0.0%, a significant effect). Finally, results revealed that anxious solitary versus control children were significantly less likely (odds ratio: 0.18) to receive a composite diagnosis of ADHD-I (2.5% vs. 13.9%). Group differences in the proportion of children meeting diagnostic criteria for all other diagnoses examined were non-significant.

Again, peers did not appear able to distinguish between anxious solitary children with and without social anxiety disorder. Anxious solitary children with versus without social anxiety disorder did not differ in regard to degree of anxious solitude ($F=14.94$, $p<0.001$; M difference = 0.17, ns ; $M(SD) = 1.39$ (0.98) vs. 1.23 (1.36)). Yet, as expected, anxious solitary children with versus without social anxiety disorder demonstrated significantly more life interference ($F=33.56$, $p<0.001$; M difference = 4.59, $p<0.001$; $M(SD) = 5.33$ (1.32) vs. 0.74 (1.32)). Again, the degree of difference in life interference between anxious solitary children with and without social anxiety disorder is remarkably large.

Sex Differences on the SPAI-C and ADIS-C/P

As expected based on extant literature, results also revealed main-effect sex differences for self-report symptoms of social anxiety disorder on the SPAI-C. Significantly more girls than boys self-reported symptoms of social anxiety disorder in the potential clinical range, both in the fall (43.9% vs. 18.8% respectively) and spring (43.0% vs. 15.3% respectively) of 4th grade (see Table 1). Girls were over two times more likely than boys (odds ratios: 2.34–2.81) to self-report symptoms of social anxiety disorder in the potential clinical range in the fall and spring of 4th grade.

Likewise, expected main-effect sex differences were evident in several ADIS diagnoses as well (see Table 5). Girls were more likely than boys to receive diagnoses of social anxiety, separation anxiety, generalized anxiety, dysthymia, and oppositional defiant disorders. In contrast, boys were more likely to receive diagnoses of specific phobia, ADHD-I, and to be diagnosis-free.

Discussion

The present study provides the first available evidence that anxious solitary children exhibit elevated rates of social anxiety disorder as well as additional anxiety and mood disorders.

This information on correspondence between developmental and clinical classifications for socially anxious children should serve to allow researchers from both traditions to make use of the full range of developmental and clinical research available on these related conditions.

Anxious Solitary Children Exhibit Elevated Symptoms and Diagnoses for Anxiety Disorders

As hypothesized, anxious solitary children demonstrated significantly elevated rates of social anxiety disorder, as well as other anxiety and mood disorders. Of those children identified by their peers as anxious solitary in the 3rd and/or 4th grade, almost 40% self-reported social anxiety symptoms in the potential clinical range on the SPAI-C (compared to just over a quarter of control children); and of those children identified as anxious solitary in the Fall of 4th grade, 30% met diagnostic criteria for social anxiety disorder according to parental reports on the ADIS-P clinical interview (compared to 12.5% of control children). This is consistent with the expectation that an elevated number of anxious solitary children would be diagnosed with social anxiety disorder, but that many anxious solitary children would not demonstrate sufficient interference to qualify for a diagnosis.

Also as hypothesized, anxious solitary children demonstrated elevated rates of additional anxiety disorders as reported by their parents in the ADIS-P clinical interview. Specifically, anxious solitary children had significantly elevated rates of specific phobia (15% vs. 3.6% for control) and tended to have elevated generalized anxiety disorder (15% vs. 5.4% for control) and post traumatic stress disorder (5% vs. 0% for control). Additionally, anxious solitary children demonstrated significantly elevated selective mutism (5% vs. 0% for control). Although selective mutism is a speech disorder, it has been argued that it can be motivated by anxiety (Beidel and Turner 2007).

Thus, anxious solitude appears most consistently linked with social anxiety disorder (regardless of whether anxious solitude was identified in the fall of 4th grade or at any time point in the 3rd or 4th grades) in comparison to other anxiety and mood disorders. Furthermore, twice as many anxious solitary children were diagnosed with social anxiety disorder than the other two most common diagnoses (30% social anxiety disorder vs. 15% generalized anxiety disorder and specific phobia). Thus, anxious solitude demonstrates a degree of specificity in manifesting the most consistent and strongest links with social anxiety disorder, but it is linked with a broader range of anxiety and mood disorders as expected.

It is also noteworthy that anxious solitude classification in the fall rather than the spring of 4th grade demonstrated stronger links to disorder. This is consistent with the expectation that children may display more socially anxious behavior in the fall when social relationships are reorganized with the reshuffling of children into new classrooms at the start of every new school year. Anxious solitary children may find the heightened uncertainty that accompanies the re-establishment of social relationships during the fall to be particularly challenging. The fall classification may therefore be more sensitive to children's anxious tendencies.

Parent Versus Child Perspectives on Disorder

It is striking that significant patterns of clinical disorder in anxious solitary children were consistently reported by parents rather than children. This is particularly remarkable because parent and child self-report agreement for anxious solitude is modest—though significant (Spangler and Gazelle 2009). It may be that parents of anxious solitary children are necessarily aware of child behavior and subjective distress when it causes life interference, such as problems with engaging in school activities or making friends, but may not be aware when interference isn't present. In contrast, children may have the tendency to endorse symptoms of social anxiety and other anxiety disorders when their experiences fall within the norm. Indeed, the pattern of results suggests that many control children *self-reported* anxiety symptoms sufficient to qualify them for anxiety diagnoses, although their parents did not. For those anxious solitary children who met criteria for social anxiety disorder, we can conclude that both peers and parents noticed deviations from normative social behavior, even when this did not appear well-aligned with children's self-reports.

A History of Anxious Solitude Predicts Mood Disorder Diagnoses Over Time

Children with a history of anxious solitude at any time during the 3rd or 4th grades, compared to control children, were also more likely to be diagnosed with a mood disorder on the basis of combined parent/child/clinician report. Interestingly, this pattern did not emerge when anxious solitary children were identified on the basis of one time point only (fall of 4th grade). This appeared to occur in part because all children who were diagnosed with a mood disorder had a history of anxious solitude at some time point (so when anxious solitary children were identified at any time point, the resulting control group no longer contained any children with mood diagnoses). It would *not* appear that these children's anxious solitude was unstable because it was simply a symptom of depression because it was the *history* of anxious solitude, rather than *concurrent* anxious solitude, that was predictive of major depression diagnoses. This temporal pattern may have occurred because anxious solitude preceded depression. This temporal ordering is consistent with evidence for anxiety as a precursor to the onset of depression in children (Cole et al. 1998). The helplessness-hopelessness model of depression offers a compelling explanation for this temporal pattern (Alloy et al. 1988, 1990). According to this model, anxious individuals experience helplessness in which they are unsure if they can effectively cope with negative events should they arise (e.g., social rejection). Such helpless individuals are particularly vulnerable to becoming hopeless. The individual becomes hopeless when they feel sure that negative events (e.g., social rejection) will happen to them, and they continue to doubt their ability to cope effectively. Consistent with the time it might take for this helplessness-hopelessness process to unfold, children with a history of anxious solitude were at risk for depression diagnoses in fourth grade even if they did not demonstrate current anxious solitude at that time. This suggests that children who display unstable patterns of anxious solitude may nonetheless continue to have a vulnerability to internalizing problems, such as the concerns described in the helplessness-hopelessness model of depression. This consideration suggests the potential role of interventions for anxious solitary children in preventing the onset of mood disorders.

Clinical Significance

Current findings raise intriguing questions about the etiology of social anxiety disorder. Chief among these is “What processes lead some anxious solitary children to develop social anxiety disorder whereas others do not?” Although anxious solitary children with and without social anxiety disorder did not differ in peer nominations for anxious solitude, there was a striking difference in the degree of life impairment experienced between the two groups. This finding parallels developmental findings indicating substantial heterogeneity in the peer relations difficulties experienced by anxious solitary children. In the future it will be important to examine whether those anxious solitary children who experience peer difficulties are also more likely to demonstrate social anxiety disorder. Moreover, longitudinal work will be needed to examine whether peer difficulties may function as a trigger of social anxiety disorder in anxious solitary children. It may be that when anxious solitary children have persistent negative experiences with peers (e.g., stable peer exclusion and/or victimization) their sub-clinical anxious tendencies escalate into full social anxiety disorder. For example, when an anxious solitary child encounters persistent peer exclusion or victimization they may devise strategies to avoid recess or refuse to attend school altogether (both indicators of life interference). Another important objective is to examine the timing of social anxiety disorder relative to anxious solitude and the experience of peer difficulties in order to examine direction of effect.

Current findings also have implications for assessment. For the clinical researcher, present findings suggest that peer behavioral nominations for anxious solitude may be a useful tool for screening large community samples for social anxiety disorder. For example, a phased screening in which children who receive elevated peer nominations for anxious solitude are then assessed with more lengthy self-report questionnaires and parent-child clinical interviews would be an efficient means of indentifying children with social anxiety disorder for research or prevention. Moreover, peer sociometric and friendship nominations provide an excellent source of information on the child’s social impairment that should be very helpful to clinicians in (1) assessing the need to intervene in the child’s peer social network as well as (2) identifying willing peer targets for the child’s therapeutic ‘homework’ of social tasks (e.g., peers who nominate the child as a friend or someone they like to play with). Moreover, the repetition of such assessment after intervention would be an excellent method of assessing change in children’s social impairment.

In regard to clinical treatment, by linking the literatures on childhood social anxiety disorder and anxious solitude, present findings provide a view of the social behavior and peer relations of children with social anxiety disorder at school. First, this literature would suggest that because some children with social anxiety disorder may have entrenched negative reputations among their peers that are resistant to change, it is insufficient to expect a child to overcome their social anxiety without actually directly addressing the child’s environment (not just how the child thinks about the environment or what interpersonal skills the child brings into the environment). This would suggest that the clinician consider not only treating the individual child, but also assessing and modifying their peer context. Assessments of peer context may either be conducted by using peer behavior nominations such as those employed in this study (if possible given resources available to clinicians),

observing the child's peer interactions at school (particularly at recess or lunchtime when children's interactions are not structured by the teacher), or at least asking the child's teacher for their assessment of the child's peer relations (teachers typically have more opportunity to observe this than do parents). In regard to modifying the peer context, several approaches are possible. First, the clinician could time individual intervention so that it capitalizes on annual school break and the reshuffling of children upon entry to the next grade. This naturalistic reorganization of children's social structure may provide an increased opportunity for a fresh start despite some familiarity among classmates. Another potentially complimentary strategy is to work with classroom teachers to create a classroom climate that promotes social inclusion. A thoughtful case study of this sort of classroom-level intervention in kindergarten is available in the book "You can't say you can't play" (Paley 1992), although empirical work is needed to evaluate such programs.

Developmental Considerations

Until recently, it was believed that there was a rise in the onset of social anxiety disorder in adolescence. However, on balance, recent epidemiological studies do not support this adolescent increase (Ford et al. 2003; Rapee et al. 2009). Consistent with this recent epidemiological data, this investigation, together with other investigations of anxiety disorders in children demonstrating signs of elevated social anxiety relative to developmental norms (Biederman et al. 2001, 1993, 1990; Hirshfeld-Becker et al. 2007; Hirshfeld et al. 1992; Rapee et al. 2005), confirms that many children experience clinically-significant social anxiety well before adolescence. At present it is unclear whether new cases of social anxiety disorder in adolescence truly represent the emergence of new anxiety, or rather are a function of increased social stress and willingness to seek help in youth with long-standing anxious tendencies due to interference with adolescent developmental tasks that require more social autonomy (Prior et al. 2000). Longitudinal work bridging developmental and clinical classification systems will be needed to distinguish between these potential developmental scenarios.

Sex Differences

The majority of findings conform to expectations of higher rates of internalizing disorder among girls, and higher rates of externalizing behavior in boys. However, parents (but not children) unexpectedly reported that boys demonstrated more specific phobia, despite consistent evidence of greater prevalence among girls in clinical research (for a review see Albano and Krain 2005). Likewise, girls versus boys unexpectedly demonstrated more elevated rates of oppositional defiant disorder according to both parent and combined parent/child/clinician report. It is unclear why these sex differences occurred, but they may have been influenced by the oversampling of children with anxious solitude and moderate sample size. These sex differences should be viewed with caution unless reproduced in other samples.

Contributions and Limitations

This is the first investigation to our knowledge to examine rates of clinical disorders among anxious solitary children. Although on the surface it may not seem surprising that children identified by peers as anxious solitary would receive elevated rates of diagnosis for social

anxiety disorder, it is important to keep in mind the following considerations. First, the overlap in criteria for these classifications is moderate as criteria for anxious solitude places greater emphasis on behavior, whereas criteria for social anxiety disorder places greater emphasis on subjective internal states. Second, rates of overlap are substantial given that peer and parent perspectives on children's affect and behavior typically do not show high rates of agreement, in part because these raters observe children in different contexts (Achenbach et al. 1987; Spangler and Gazelle 2009) (children's classmates were informants of anxious solitude whereas parents were informants on the version of the clinical interview that yielded significant differences between anxious solitary and control children in social anxiety disorder). Third, the goal of this investigation was not so much to be surprising, but rather to examine empirically the speculations that have long been made about the overlap between the two classifications and determine the extent of this overlap and the nature of difference between anxious solitary children who do and do not meet criteria for social anxiety disorder. Results suggest that the most striking difference between these groups is life interference, reminiscent of findings indicating substantial heterogeneity among anxious solitary children in peer difficulties such as exclusion and victimization (Gazelle 2008).

Results confirmed expectations of elevated anxiety and mood disorders among anxious solitary children, suggesting the importance of preventative intervention with children who display this deviation from developmental norms. However, further research is needed to better understand the relation between the developmental classification of anxious solitude and clinical disorder. In particular, larger-scale longitudinal work is needed to understand the timing and processes involved in disorder onset among anxious solitary children.

This investigation benefited from a sample drawn from a relatively large and ethnically diverse screening sample. However, a smaller subsample of children and parents participated in the clinical interview, including proportionally fewer ethnic minorities. In the future it will be important to ensure the proportional inclusion of minority participants in clinical components of research. Although home interviews were offered to families who were unable to attend lab-based clinical interviews, and Spanish-language interpreters were provided when needed, additional efforts will be necessary to maximize the participation of minority families. Another potential limitation to the sample is that children with severe social anxiety disorder may not be included due to refusal to attend school. However, investigation of school-based community samples is clearly valuable in providing a better sense of rates of disorder across more representative samples of the population than possible with clinical samples.

This preliminary study provides the first empirical support for the relation between anxious solitude and social anxiety disorder. It also suggests that peer behavioral nominations for anxious solitude are an effective mechanism of identifying children from large community samples for more in-depth screening for anxiety disorders. This could be a valuable tool in future research. Moreover, this information on the overlap between developmental and clinical classifications should provide a basis for scientists from each discipline to make use of each others' work. Utilizing both developmental and clinical classification systems in future work should promote cross-fertilization among these sub-disciplines.

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Percentage values outside of parentheses indicate percent of subgroup (AS or control) or same-sex group, percentage values inside parentheses indicate percent of sample.

 $p < 0.001$. Directional cutoffs used in significance tests. AS = anxious solitary.

Table 2
Social Anxiety Disorder Diagnosis Percentages and Chi-square by SPAL-C Group and Time

Social anxiety disorder diagnosis		SPAL-C		18		Yes %	vs.	No %	Odds ratio	χ^2
Parent report										
Fall				33.3 (10.5)	>	9.6 (6.6)		3.47		6.52**
Spring				17.4 (5.3)		17.0 (11.8)		1.02		0.01
Child report										
Fall				37.5 (11.8)	>	15.4 (10.5)		2.44		4.63*
Spring				39.1 (11.8)	>	15.1 (10.5)		2.59		5.33*
Parent/Child/Clinician Composite										
Fall				41.7 (13.2)	>	21.2 (14.5)		1.97		3.46*
Spring				34.8 (10.5)		24.5 (17.1)		1.42		0.84

N=76. SPAL-C < 18 n=52 fall/53 spring. SPAL-C 18 n=24 fall/23 spring.

Percentage values outside of parentheses indicate percent of subgroup (above or below SPAL-C cutoff), percentage values inside parentheses indicate percent of sample.

* $p < 0.05$,

** $p < 0.01$. Directional cutoffs used in significance tests.

Table 3

ADIS Diagnosis Percentage and Chi-square by Anxious Solitary Versus Control Group in Fall of 4th Grade and Informant

Diagnosis	Parent report				Child report				Parent/Child/Clinician Composite						
	AS %	vs.	Control %	Odds ratio	χ^2	AS %	vs.	Control %	Odds ratio	χ^2	AS %	vs.	Control %	Odds ratio	χ^2
Anxiety															
SepAD	d	5.0 (1.3)	7.1 (5.3)	0.70	0.11	5.0 (1.3)	14.3 (10.5)	0.35	1.22	15.0 (3.9)	10.0 (7.9)	1.50	0.26		
SocAD	d	30.0 (7.9)	>	12.5 (9.2)	2.40	3.18*	10.0 (2.6)	26.8 (19.7)	0.37	2.39	30.0 (7.9)	26.8 (19.7)	1.12	0.08	
SP	d	15.0 (3.9)	>	3.6 (2.6)	4.17	3.13*	10.0 (2.6)	10.7 (7.9)	0.93	0.01	10.0 (2.6)	8.9 (6.6)	1.12	0.02	
PD		0.0 (0.0)		1.8 (1.3)	0.00	0.36	0.0 (0.0)	0.0 (0.0)	–		0.0 (0.0)	0.0 (0.0)	–		
Agor		0.0 (0.0)		1.8 (1.3)	0.00	0.36	0.0 (0.0)	0.0 (0.0)	–		0.0 (0.0)	0.0 (0.0)	–		
GAD	d	15.0 (3.9)	>	5.4 (3.9)	2.78	1.88†	5.0 (1.3)	5.4 (3.9)	0.93	0.00	10.0 (2.6)	8.9 (6.6)	1.12	0.02	
OCD		0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)	0.0 (0.0)	–		0.0 (0.0)	0.0 (0.0)	–		
PTSD		5.0 (1.3)	>	0.0 (0.0)	–	2.84†	0.0 (0.0)	1.8 (1.3)	0.00	0.36	5.0 (1.3)	1.8 (1.3)	2.78	0.59	
Mood															
Dys	d	0.0 (0.0)		1.8 (1.3)	0.00	0.36	0.0 (0.0)	5.4 (3.9)	0.00	1.12	0.0 (0.0)	3.6 (2.6)	0.00	0.73	
MDD	d	0.0 (0.0)		1.8 (1.3)	0.00	0.36	5.0 (1.3)	3.6 (2.6)	1.39	0.08	5.0 (1.3)	5.4 (3.9)	0.93	0.00	
Externalizing															
ADHD-I		10.0 (2.6)		3.6 (2.6)	2.78	1.22	0.0 (0.0)	1.8 (1.3)	0.00	0.36	5.0 (1.3)	8.9 (6.6)	0.56	0.31	
ADHD-H		0.0 (0.0)		1.8 (1.3)	0.00	0.36	0.0 (0.0)	1.8 (1.3)	0.00	0.36	0.0 (0.0)	3.6 (2.6)	0.00	0.73	
ADHD-C		5.0 (1.3)		16.1 (11.8)	0.31	1.58	5.0 (1.3)	1.8 (1.3)	2.78	0.59	5.0 (1.3)	19.6 (14.5)	0.26	2.38	
CD		0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		–		0.0 (0.0)	1.8 (1.3)	0.00	0.36	
ODD		10.0 (2.6)		12.5 (9.2)	0.80	0.09				10.0 (2.6)	12.5 (9.2)	0.80	0.09		
Other (Speech, Elimination, Sleep)															
SelMut	d	5.0 (1.3)	>	0.0 (0.0)	–	2.84*	0.0 (0.0)	0.0 (0.0)	–		5.0 (1.3)	>	0.0 (0.0)	–	2.84*
Enur		0.0 (0.0)		1.8 (1.3)	0.00	0.36					0.0 (0.0)	1.8 (1.3)	0.00	0.36	
SlpTer		0.0 (0.0)		0.0 (0.0)	–				–		0.0 (0.0)	0.0 (0.0)	–		
None															
None		45.0 (11.8)		47.5 (27.6)	0.95	0.35	75.0 (19.7)	64.3 (47.4)	1.17	0.77	50.0 (13.2)	53.6 (39.5)	0.93	0.08	

SepAD Separation Anxiety Disorder, SocAD Social Anxiety Disorder, SP Specific Phobia, PD Panic Disorder, Agor Agoraphobia, GAD Generalized Anxiety Disorder, OCD Obsessive Compulsive Disorder, PTSD Post Traumatic Stress Disorder, Dys Dysrhythmia, MDD Major Depressive Disorder, ADHD-I Attention Deficit/Hyperactivity Disorder-Inattentive Type, ADHD-H Hyperactive Type, ADHD-C Combined Type, CD Conduct Disorder, ODD Oppositional Defiant Disorder, SelMut Selective Mutism, Enur Enuresis, SlpTer Sleep Terror Disorder.

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The ADIS does not solicit child self reports for CD, ODD, Enur, or SlpTer.

N=76. AS n=20. Control n=56. Percentage values outside of parentheses indicate percent of subgroup (AS or control), percentage values inside parentheses indicate percent of sample.

[†] $p<0.10$.

^{*} $p<0.05$. d = directional cutoffs used in significance tests. AS = anxious solitary.

Table 4

ADIS Diagnosis Percentages and Chi-square by Anxious Solitary Versus Control Group in 3rd or 4th Grade and Informant

Diagnosis	Parent report				Child report				Parent/Child/Clinician Composite							
	AS %		vs.	Control %	Odds ratio	χ^2	AS %	vs.	Control %	Odds ratio	χ^2	AS %	vs.	Control %	Odds ratio	χ^2
Anxiety																
SepAD	d	5.0 (2.6)		8.3 (3.9)	0.60	0.34	12.5 (6.6)		11.1 (5.3)	1.13	0.04	15.0 (7.9)		8.3 (3.9)	1.81	0.81
SocAD	d	22.5 (11.8)	>	11.1 (5.3)	2.03	1.73 [†]	22.5 (11.8)		22.2 (10.5)	1.01	0.00	30.0 (15.8)		25.0 (11.8)	1.20	0.24
SP	d	7.5 (3.9)		5.6 (2.6)	1.34	1.12	12.5 (6.6)		8.3 (3.9)	1.51	0.35	12.5 (6.6)		5.6 (2.6)	2.23	1.09
PD		0.0 (0.0)		2.8 (1.3)	0.00	1.13	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
Agor		0.0 (0.0)		2.8 (1.3)	0.00	1.13	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
GAD	d	7.5 (3.9)		8.3 (3.9)	0.90	0.02	7.5 (3.9)		2.8 (1.3)	2.68	0.85	10.0 (5.3)		8.3 (3.9)	1.20	0.06
OCD		0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
PTSD		2.5 (1.3)		0.0 (0.0)	–	0.91	2.5 (1.3)		0.0 (0.0)	–	0.91	5.0 (2.6)	>	0.0 (0.0)	–	1.85 [†]
Mood																
Dys	d	2.5 (1.3)		0.0 (0.0)	–	0.91	5.0 (2.6)		2.8 (1.3)	1.79	0.25	5.0 (2.6)	>	0.0 (0.0)	–	1.85 [†]
MDD	d	2.5 (1.3)		0.0 (0.0)	–	0.91	5.0 (2.6)		2.8 (1.3)	1.79	0.25	10.0 (5.3)	>	0.0 (0.0)	–	3.80 [*]
Externalizing																
ADHD-I		5.0 (2.6)		5.6 (2.6)	0.89	0.01	0.0 (0.0)		2.8 (1.3)	0.00	1.13	2.5 (1.3)	<	13.9 (6.6)	0.18	3.38 [†]
ADHD-H		0.0 (0.0)		2.8 (1.3)	0.00	1.13	0.0 (0.0)		0.0 (0.0)	–		2.5 (1.3)		2.8 (1.3)	0.89	0.01
ADHD-C		15.0 (7.9)		11.1 (5.3)	1.35	0.25	5.0 (2.6)		0.0 (0.0)	–	1.85	15.0 (7.9)		16.7 (7.9)	0.90	0.04
CD		0.0 (0.0)		0.0 (0.0)	–							0.0 (0.0)		2.8 (1.3)	0.00	1.13
ODD		15.0 (7.9)		8.3 (3.9)	1.81	0.81						15.0 (7.9)		8.3 (3.9)	1.81	0.81
Other (Speech, Elimination, Sleep)																
SelMut	d	2.5 (1.3)		0.0 (0.0)	–	0.91	0.0 (0.0)		0.0 (0.0)	–		2.5 (1.3)		0.0 (0.0)	–	0.91
Enur		2.5 (1.3)		0.0 (0.0)	–	0.91						2.5 (1.3)		0.0 (0.0)	–	0.91
SlpTer		0.0 (0.0)		0.0 (0.0)	–							0.0 (0.0)		0.0 (0.0)	–	
None																
None		35.0 (18.4)		44.4 (21.1)	0.79	0.71	72.5 (38.2)		61.1 (28.9)	1.19	1.11	47.5 (27.6)		58.3 (25.0)	0.81	0.89

SepAD Separation Anxiety Disorder, SocAD Social Anxiety Disorder, SP Specific Phobia, PD Panic Disorder, Agor Agoraphobia, GAD Generalized Anxiety Disorder, OCD Obsessive Compulsive Disorder, PTSD Post Traumatic Stress Disorder, Dys Dysrhythmia, MDD Major Depressive Disorder, ADHD-I Attention Deficit/Hyperactivity Disorder-Inattentive Type, ADHD-H Hyperactive Type, ADHD-C Combined Type, CD Conduct Disorder, ODD Oppositional Defiant Disorder, SelMut Selective Mutism, Enur Enuresis, SlpTer Sleep Terror Disorder.

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N=76. AS n=40. Control n=36. Percentage values outside of parentheses indicate percent of subgroup (AS or control), percentage values inside parentheses indicate percent of sample.

[†] $p<0.10$.

^{*} $p < 0.05$. d = directional cutoffs used in significance tests. AS = anxious solitary.

Table 5

ADIS Diagnosis Percentages and Chi-square by Sex and Informant

Diagnosis	Parent report				Child report				Parent/Child/Clinician Composite						
	Girls %	vs.	Boys %	Odds ratio	χ ²	Girls %	vs.	Boys %	Odds ratio	χ ²	Girls %	vs.	Boys %	Odds ratio	χ ²
Anxiety															
SepAD	7.7 (3.9)		5.4 (2.6)	1.43	0.16	20.5 (10.5)	>	2.7 (1.3)	7.59	5.77*	20.5 (10.5)	>	2.7 (1.3)	7.59	5.77*
SocAD	23.1 (11.8)		10.8 (5.3)	2.14	2.02	33.3 (17.1)	>	10.8 (5.3)	3.08	5.55*	38.5 (19.7)	>	16.2 (7.9)	2.38	4.70*
SP	2.6 (1.3)		10.8 (5.3)	0.24	2.10	12.8 (6.6)		8.1 (3.9)	1.58	0.45	10.3 (5.3)		8.1 (3.9)	1.27	0.11
PD	2.6 (1.3)		0.0 (0.0)	–	0.96	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
Agor	2.6 (1.3)		0.0 (0.0)	–	0.96	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
GAD	7.7 (3.9)		8.1 (3.9)	0.95	0.01	10.3 (5.3)	>	0.0 (0.0)	–	4.01*	15.4 (7.9)	>	2.7 (1.3)	5.70	3.65*
OCD	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		0.0 (0.0)	–	
PTSD	0.0 (0.0)		2.7 (1.3)	0.00	1.07	2.6 (1.3)		0.0 (0.0)	–	0.96	2.6 (1.3)		2.7 (1.3)	0.96	0.00
Mood															
Dys	2.6 (1.3)		0.0 (0.0)	–	0.96	7.7 (3.9)	>	0.0 (0.0)	–	2.96 [†]	5.1 (2.6)	>	0.0 (0.0)	–	1.95 [†]
MDD	2.6 (1.3)		0.0 (0.0)	–	0.96	5.1 (2.6)		2.7 (1.3)	1.89	0.30	7.7 (3.9)		2.7 (1.3)	2.85	0.95
Externalizing															
ADHD-I	0.0 (0.0)	<	10.8 (5.3)	0.00	4.45*	0.0 (0.0)		2.7 (1.3)	0.00	1.07	0.0 (0.0)	<	16.2 (7.9)	–	6.87**
ADHD-H	2.7 (1.3)		0.0 (0.0)	–	1.07	2.6 (1.3)		0.0 (0.0)	–	0.96	2.6 (1.3)		2.7 (1.3)	0.96	0.00
ADHD-C	12.8 (6.6)		13.5 (6.6)	0.95	0.01	2.6 (1.3)		2.7 (1.3)	0.96	0.00	12.8 (6.6)		18.9 (9.2)	0.68	0.53
CD	0.0 (0.0)		0.0 (0.0)	–							2.6 (1.3)		0.0 (0.0)	–	0.96
ODD	17.9 (9.2)	>	5.4 (2.6)	3.31	2.86 [†]						17.9 (9.2)	>	5.4 (2.6)	3.31	2.86 [†]
Other (Speech, Elimination, Sleep)															
SelMut	0.0 (0.0)		2.7 (1.3)	0.00	1.07	0.0 (0.0)		0.0 (0.0)	–		0.0 (0.0)		2.7 (1.3)	0.00	1.07
Enur	2.6 (1.3)		0.0 (0.0)	–	0.96						2.6 (1.3)		0.0 (0.0)	–	0.96
SlpTer	0.0 (0.0)		0.0 (0.0)	–							0.0 (0.0)		0.0 (0.0)	–	
None															
None	33.3 (17.1)		45.9 (22.4)	0.73	1.26	56.4 (28.9)	<	78.4 (38.2)	0.72	6.18*	41.0 (21.1)	<	64.9 (31.6)	0.63	4.33*

SepAD Separation Anxiety Disorder, *SocAD* Social Anxiety Disorder, *SP* Specific Phobia, *PD* Panic Disorder, *Agor* Agoraphobia, *GAD* Generalized Anxiety Disorder, *OCD* Obsessive Compulsive Disorder, *PTSD* Post Traumatic Stress Disorder, *Dys* Dysrhythmia, *MDD* Major Depressive Disorder, *ADHD-I* Attention Deficit/Hyperactivity Disorder-Inattentive Type, *ADHD-H* Hyperactive Type, *ADHD-C* Combined Type, *CD* Conduct Disorder, *ODD* Oppositional Defiant Disorder, *SelMut* Selective Mutism, *Enur* Enuresis, *SlpTer* Sleep Terror Disorder.

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N=76. Girls *n*=39. Boys *n*=37. Percentage values outside of parentheses indicate percent of same sex children, percentage values inside parentheses indicate percent of sample.

[†] *p*<0.10,
* *p*<0.05,
** *p*<0.01.