Shorter communication

Psychopathological correlates of self-reported behavioural inhibition in normal children

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Abstract

The present study examined the relationship between self-reported behavioural inhibition and psychopathological symptoms in a sample of 152 children aged 12–14 years. Children were provided with a definition of behavioural inhibition and then asked to classify themselves as low, middle or high on behavioural inhibition. Furthermore, children completed questionnaires of worry, depression and anxiety symptoms. Results showed that children who endorsed the high behavioural inhibition category had elevated levels of anxiety, worry and depression compared to children who endorsed the low or middle behavioural inhibition categories. Moreover, children high on behavioural inhibition more frequently reported anxiety disorders symptoms in the subclinical range. These findings fit well with those of previous studies on behavioural inhibition. © 1999 Elsevier Science Ltd. All rights reserved.

1. Introduction

Anxiety disorders affect a considerable minority of children and adolescents (e.g. Bernstein & Borchartd, 1991; Bernstein, Borchartd, & Perwien, 1996). Epidemiological research has revealed prevalence rates ranging between 5 and 20%, with half of the rates exceeding 10% (Costello & Angold, 1995). A number of studies have shown that anxiety disorders symptoms are also common in normal children. For example, Bell-Dolan, Last, & Strauss (1990) found that symptoms of overanxious disorder, separation anxiety disorder, and subclinical phobias were present in 20–30% of a sample of never-psychiatrically-ill children (see, for similar results, Muris, Merckelbach, Mayer, & Prins, submitted for publication a).

Behavioral inhibition is a temperamental factor referring to the tendency to be unusually shy or to react with fear and withdrawal in novel and/or unfamiliar social situations (e.g. Kagan,
Behavioral inhibition has been proposed as a risk factor for developing anxiety disorders in children. Evidence for this comes from a study of Biederman et al. (1993). In that study, preschool children were followed for a 3-year period. Results showed that children initially identified as behaviorally inhibited were subsequently more likely to develop multiple psychiatric disorders compared to control children (i.e. children who at study onset were not classified as behaviorally inhibited). In particular, avoidant disorder (in the DSM-IV: social phobia), separation anxiety disorder and agoraphobia were significantly more prevalent in the subsample with behavioral inhibition. The Biederman et al. (1993) study also found that in the inhibited children, the rates of all anxiety disorders increased markedly from baseline to follow-up (see, for a comprehensive review of behavioral inhibition studies in preschool children, Biederman, Rosenbaum, Chalof and Kagan, 1995).

In line with these results, Stevenson-Hinde and Glover (1996) found in a sample of preschool children that extreme shyness was accompanied by relatively high levels of negative mood, worry and fears.

Behavioral inhibition, and in its wake shyness, are considered to be enduring temperamental traits that are relatively stable from early to middle and late childhood (Kagan, Reznick, & Snidman, 1988; Scarpa, Raine, Venables, & Mednick, 1995; Gest, 1997). However, so far, no study has directly examined whether in older children there exists a robust connection between behavioral inhibition/shyness, on the one hand, and anxiety and other psychopathological symptoms, on the other hand. Meanwhile, there is some tentative evidence that shyness in primary and secondary school children is positively associated with high levels of anxiety (Lawrence & Bennett, 1992; Irving & Irving, 1994).

The present study explored in a group of 12–14 year old children the relationship between behavioral inhibition, on the one hand, and anxiety disorders symptoms, worry and depression, on the other hand. Two measures of behavioral inhibition were used. First, children answered a set of questions about typical behavioral inhibition features. Second, they were provided with a definition of behavioral inhibition and then asked to classify themselves as either low, middle or high on behavioral inhibition. In addition, children completed the screen for child anxiety related emotional disorders (SCARED; Birmaher et al., 1997; Muris, Merckelbach, Schmidt, & Mayer, in press a), the penn state worry questionnaire for children (PSWQ-C; Chorpita, Tracey, Brown, Collica, & Barlow, 1997) and the depression questionnaire for children (DQC; De Wit, 1987).

2. Method

2.1. Children and procedure

One hundred and fifty-two children (74 boys and 78 girls; mean age: 12.4, S.D. = 0.6, range 12–15 years) were recruited from a regular secondary school in Maastricht, The Netherlands. They were asked to complete the behavioral inhibition measures and several questionnaires (see below). This was done in their classrooms in the presence of a research assistant who answered questions when necessary.
2.2. Questionnaires

The behavioral inhibition form consisted of two parts. The first part was the behavioral inhibition scale (BIS; see Gest, 1997) which consists of 4 items: shyness (“I am shy when I have to talk to an unfamiliar person”), communication (“I talk easily to an unfamiliar person”), fearfulness (“I feel nervous when I have to talk to an unfamiliar person”) and smiling (“I feel good and I am able to laugh, when I talk to an unfamiliar person”). Each item is scored on a 4-point Likert scale: 1 means never, 2 sometimes, 3 often and 4 always. After recoding the positive items, scores are summed to yield a total BIS score, ranging from 4 (not apprehensive, not shy and very sociable when meeting an unfamiliar person) to 16 (very apprehensive and shy and not capable of initiating social interaction with an unfamiliar person). The second part of the behavioral inhibition form provided the children with three descriptions: (1) “As long as I remember, I am shy when I have to talk to an unfamiliar person. On such occasions, I am nervous, I am not able to laugh and I do not know what to say” (high behavioral inhibition), (2) “As long as I remember, I talk easily to an unfamiliar person. On such occasions, I feel good, I am able to laugh and I know precisely what I have to say” (low behavioral inhibition) and (3) “I am someone falling in between 1 and 2” (middle behavioral inhibition). Children were asked to assign themselves to one of these three behavioral inhibition categories.

The SCARED (Birmaher et al., 1997; Muris et al., in press a) is a 66-item self-report questionnaire measuring anxiety disorders symptomatology. It consists of 9 DSM-IV linked subscales: panic disorder symptoms (13 items; e.g. “When frightened, my heart beats fast”), generalized anxiety disorder symptoms (9 items; e.g. “I worry about things working out for me”), social phobia symptoms (4 items; e.g. “I don’t like to be with people I don’t know”), separation anxiety disorder symptoms (12 items; e.g. “I don’t like being away from my family”), obsessive–compulsive disorder symptoms (9 items; e.g. “I have thoughts that frighten me”), traumatic stress disorder symptoms (4 items; e.g. “I have frightening dreams about a very aversive experience I once had”), specific phobia — animal type symptoms (3 items; e.g. “I am afraid of an animal that is not really dangerous”), specific phobia — blood-injection-injury type symptoms (7 items; e.g. “I am afraid to go to the dentist”) and specific phobia — environmental–situational type symptoms (5 items; e.g. “I am scared to fly in an airplane”). Children have to rate how frequently they experience each symptom on a 3-point scale: almost never, sometimes or often. These are scored 0, 1 and 2, respectively. SCARED total score and subscale scores can be obtained by summing across relevant items.

The PSWQ-C (Chorpita et al., 1997) consists of 14 items (e.g. “I worry all the time”, “I am always worrying about something” and “My worries really bother me”) that have to be scored on a 4-point Likert scale: 0 means never, 1 sometimes, 2 often and 3 always. A total score is computed ranging between 0 and 42, with higher scores reflecting a stronger tendency to worry.

The DQC (De Wit, 1987) consists of 9 items such as “I feel depressed lately” and “I often think that other people don’t like me”. Children have to indicate whether items are true or not true. Scores vary between 0 (no depression symptoms) and 9 (all depression symptoms present).
3. Results

3.1. Psychometric and demographic data

The left panel of Table 1 presents descriptive statistics for the questionnaires used in the present study. All questionnaires appeared to have satisfactory internal consistency. Cronbach’s alphas were 0.82 for BIS, 0.85 for PSWQ-C, 0.75 for DQC and varied between 0.53 (environmental–situational phobia) and 0.93 (total score) for the various SCARED scales. Furthermore, \( t \)-tests revealed that were significant sex differences with regard to BIS \( (t(150) = 2.0, \ P < 0.05) \), PSWQ-C \( (t(150) = 2.7, \ P < 0.01) \), SCARED total score \( (t(136.5, \ \text{adjusted df}) = 2.4, \ P < 0.05) \), panic disorder \( (t(126.0, \ \text{adjusted df}) = 2.0, \ P < 0.05) \), generalized anxiety disorder \( (t(150) = 2.3, \ P < 0.05) \), animal phobia \( (t(136.8, \ \text{adjusted df}) = 2.2, \ P < 0.05) \), blood-injection-injury phobia \( (t(141.1, \ \text{adjusted df}) = 3.4, \ P < 0.005) \) and environmental–situational phobia \( (t(125.7, \ \text{adjusted df}) = 2.6, \ P < 0.01) \). As expected, girls exhibited higher levels of behavioral inhibition, worry, and anxiety symptoms than boys.

3.2. Correlations among questionnaires

The right panel of Table 1 shows Pearson product–moment correlations (corrected for sex) among BIS, PSWQ-C, DQC and SCARED scales. From this correlational matrix, three conclusions can be drawn. To begin with, significant positive associations were found between

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Total group ( (N = 152) )</th>
<th>Boys ( (n = 74) )</th>
<th>Girls ( (n = 78) )</th>
<th>( \alpha )</th>
<th>BIS</th>
<th>PSWQ-C</th>
<th>DQC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>9.0 (2.6)</td>
<td>8.6 (2.4)</td>
<td>9.4 (2.6)*</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSWQ-C</td>
<td>11.4 (5.6)</td>
<td>10.1 (5.4)</td>
<td>12.5 (5.6)*</td>
<td>0.85</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DQC</td>
<td>1.3 (1.8)</td>
<td>1.3 (1.8)</td>
<td>1.4 (1.8)</td>
<td>0.75</td>
<td>0.28</td>
<td>0.56*</td>
<td></td>
</tr>
<tr>
<td>SCARED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score</td>
<td>22.8 (15.7)</td>
<td>19.7 (12.2)</td>
<td>25.7 (17.9)*</td>
<td>0.93</td>
<td>0.46</td>
<td>0.73*</td>
<td>0.66*</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>2.8 (3.2)</td>
<td>2.3 (2.2)</td>
<td>3.3 (3.8)*</td>
<td>0.81</td>
<td>0.33</td>
<td>0.63*</td>
<td>0.59*</td>
</tr>
<tr>
<td>Generalized anxiety disorder</td>
<td>3.5 (3.3)</td>
<td>2.9 (2.8)</td>
<td>4.1 (3.7)*</td>
<td>0.83</td>
<td>0.30</td>
<td>0.78*</td>
<td>0.67*</td>
</tr>
<tr>
<td>Social phobia</td>
<td>2.3 (2.1)</td>
<td>2.0 (1.7)</td>
<td>2.6 (2.3)</td>
<td>0.85</td>
<td>0.78</td>
<td>0.41*</td>
<td>0.35*</td>
</tr>
<tr>
<td>Separation anxiety disorder</td>
<td>3.4 (3.1)</td>
<td>3.4 (2.8)</td>
<td>3.5 (3.5)</td>
<td>0.75</td>
<td>0.30</td>
<td>0.64*</td>
<td>0.63*</td>
</tr>
<tr>
<td>Obsessive–compulsive disorder</td>
<td>4.1 (2.6)</td>
<td>4.0 (2.5)</td>
<td>4.1 (2.7)</td>
<td>0.66</td>
<td>0.17</td>
<td>0.57*</td>
<td>0.54*</td>
</tr>
<tr>
<td>Traumatic stress disorder</td>
<td>1.5 (1.9)</td>
<td>1.3 (1.7)</td>
<td>1.7 (2.2)</td>
<td>0.81</td>
<td>0.22</td>
<td>0.48*</td>
<td>0.54*</td>
</tr>
<tr>
<td>Animal phobia</td>
<td>0.7 (1.3)</td>
<td>0.5 (1.0)</td>
<td>0.9 (1.5)*</td>
<td>0.82</td>
<td>0.26</td>
<td>0.12</td>
<td>0.18</td>
</tr>
<tr>
<td>Blood-injection-injury phobia</td>
<td>2.9 (2.6)</td>
<td>2.2 (2.1)</td>
<td>3.6 (2.9)*</td>
<td>0.68</td>
<td>0.39</td>
<td>0.35*</td>
<td>0.14</td>
</tr>
<tr>
<td>Environmental–situational phobia</td>
<td>1.5 (1.7)</td>
<td>1.2 (1.2)</td>
<td>1.9 (2.0)*</td>
<td>0.53</td>
<td>0.16</td>
<td>0.27</td>
<td>0.28*</td>
</tr>
</tbody>
</table>

Note. BIS means behavioral inhibition scale, PSWQ-C penn state worry questionnaire for children, DQC depression questionnaire for children, SCARED screen for child anxiety related emotional disorders. *\( P < 0.001 \).* Significant sex difference.
behavioral inhibition as indexed by BIS, on the one hand, and worry, depression and anxiety symptoms, on the other hand. Thus, high levels of behavioral inhibition were accompanied by high levels of psychopathology. Second, depression, worry and anxiety were substantially intercorrelated (r-values between 0.56 (worry–depression) and 0.73 (worry–anxiety)). Third, correlations between BIS, PSWQ-C and DQC, on the one hand and SCARED subscales, on the other hand, yielded the to-be-expected pattern. That is, BIS was most convincingly associated with SCARED social phobia (r = 0.78), PSWQ-C was strongly related to SCARED generalized anxiety disorder (r = 0.78) and DQC was substantially connected to SCARED generalized anxiety disorder (r = 0.67) and separation anxiety disorder (r = 0.63).

3.3. Behavioral inhibition and psychopathological symptoms

The number (percentage) of children who classified themselves as either low, middle or high behaviorally inhibited were 47 (30.9%), 88 (57.9%) and 17 (11.2%), respectively. The three categories were characterized by an uneven distribution of boys and girls ($\chi^2(2) = 6.6, P < 0.05$). The number (percentage) of boys and girls were 30 (63.8%) and 17 (36.2%) in the low behavioral inhibition group, 38 (43.2%) and 50 (56.8%) in the middle behavioral inhibition group and 6 (35.3%) and 11 (64.7%) in the high behavioral inhibition group. Thus, girls defined themselves more frequently as middle or high on behavioral inhibition than boys.

A series of 2 (sex) x 3 (group: low/middle/high behavioral inhibition) analyses of variance (ANOVAs) produced a consistent pattern of results. First, a significant main effect of group emerged for BIS. As expected, children low on behavioral inhibition scored relatively low on the BIS, children high on behavioral inhibition scored relatively high on the BIS, whereas children middle on behavioral inhibition scored in between. Second, and most importantly, significant main effects of group were found for worry (PSWQ), depression (DQC) and anxiety (SCARED) (see Table 2). In most cases, post hoc tests revealed a linear association between behavioral inhibition and psychopathological symptoms. That is, children low on behavioral inhibition had the lowest psychopathology scores, children high on behavioral inhibition had the highest psychopathology scores, whereas children middle on behavioral inhibition scored in between.

It is important to note that the relationship between behavioral inhibition and anxiety symptoms was not only carried by social phobia symptoms. Significant group effects were also found for SCARED panic disorder, generalized anxiety disorder, separation anxiety disorder, obsessive–compulsive disorder and blood-injection-injury phobia. In addition, low, middle and high behaviorally inhibited children differed significantly on a SCARED total score that was corrected for items that clearly had a social phobia content (i.e. the four social phobia items, and “I worry about others liking me” and “I worry about being as good as other kids”).

3.4. Behavioral inhibition and (sub)clinical anxiety disorders

Cutoff scores recommended by Muris et al. (submitted for publication a) were used to identify children who exhibited SCARED scores in the (sub)clinical range. Next, the three behavioral inhibition categories were compared to each other in terms of the frequency of children scoring in the (sub)clinical range on SCARED subtests. This was done by means of $\chi^2$
Table 2
Means and standard deviations (calculated per sex) for the low, middle and high behavioral inhibition group. Results of the main 2 (sex) × 3 (group: behavioral inhibition) ANOVAs are shown in the right columns of the table.

<table>
<thead>
<tr>
<th></th>
<th>Low behavioral inhibition</th>
<th>Middle behavioral inhibition</th>
<th>High behavioral inhibition</th>
<th>ANOVAs (F-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total (N = 47)</td>
<td>boys (n = 30)</td>
<td>girls (n = 17)</td>
<td>total (N = 88)</td>
</tr>
<tr>
<td>BIS</td>
<td>6.6 (1.7)</td>
<td>6.7 (1.8)</td>
<td>6.5 (1.7)</td>
<td>9.5 (1.6)</td>
</tr>
<tr>
<td>PSWQ-C</td>
<td>8.9 (4.2)</td>
<td>8.4 (4.3)</td>
<td>9.7 (4.1)</td>
<td>12.2 (4.9)</td>
</tr>
<tr>
<td>DQC</td>
<td>0.7 (0.9)</td>
<td>0.8 (1.0)</td>
<td>0.7 (0.8)</td>
<td>1.4 (1.9)</td>
</tr>
<tr>
<td>SCARED</td>
<td><strong>Total score</strong></td>
<td>(15.1 (7.1))</td>
<td>(15.6 (7.1))</td>
<td>(14.1 (9.4))</td>
</tr>
<tr>
<td></td>
<td><strong>Total score</strong>a</td>
<td>(14.0 (7.4))</td>
<td>(14.4 (6.6))</td>
<td>(13.4 (8.8))</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>1.6 (1.5)</td>
<td>1.7 (1.6)</td>
<td>1.2 (1.5)</td>
<td>3.0 (3.2)</td>
</tr>
<tr>
<td>Generalized anxiety</td>
<td>2.6 (2.0)</td>
<td>2.4 (1.8)</td>
<td>2.9 (2.3)</td>
<td>3.7 (3.3)</td>
</tr>
<tr>
<td>Social phobia</td>
<td>0.7 (1.0)</td>
<td>0.9 (1.2)</td>
<td>0.3 (0.6)</td>
<td>2.7 (1.7)</td>
</tr>
<tr>
<td>Separation anxiety</td>
<td>2.4 (1.7)</td>
<td>2.7 (1.4)</td>
<td>1.8 (1.9)</td>
<td>3.7 (3.4)</td>
</tr>
<tr>
<td>Obsessive–compulsive</td>
<td>3.3 (2.1)</td>
<td>3.8 (2.2)</td>
<td>2.6 (1.9)</td>
<td>4.4 (2.5)</td>
</tr>
<tr>
<td>Traumatic stress</td>
<td>1.1 (1.7)</td>
<td>1.0 (1.5)</td>
<td>1.4 (2.0)</td>
<td>1.6 (1.9)</td>
</tr>
<tr>
<td>Animal phobia</td>
<td>0.4 (1.0)</td>
<td>0.5 (1.2)</td>
<td>0.3 (0.7)</td>
<td>0.8 (1.3)</td>
</tr>
<tr>
<td>Blood-injection-injury</td>
<td>1.7 (1.6)</td>
<td>1.3 (1.2)</td>
<td>2.3 (2.1)</td>
<td>3.2 (2.7)</td>
</tr>
<tr>
<td>Environmental–situational phobia</td>
<td>1.4 (1.6)</td>
<td>1.4 (1.3)</td>
<td>1.4 (2.0)</td>
<td>1.5 (1.6)</td>
</tr>
</tbody>
</table>

Note. BIS means behavioral inhibition scale, PSWQ-C Penn State Worry Questionnaire for Children, DQC Depression Questionnaire for Children, SCARED Screen for Child Anxiety Related Emotional Disorders. aTotal SCARED score corrected for items that have a social phobia content. bEvaluating the differences between the low, middle and high behavioral inhibition group. cP < 0.05, **P < 0.01, ***P < 0.001, ns = non-significant.
tests (one-tailed). This revealed (marginally) significant differences between low, middle and high behavioral inhibition groups for SCARED separation anxiety disorder ($\chi^2(2) = 10.0$, $P < 0.005$), generalized anxiety disorder ($\chi^2(2) = 9.9$, $P < 0.01$), animal phobia ($\chi^2(2) = 3.6$, $P < 0.10$), blood-injection-injury phobia ($\chi^2(2) = 16.1$, $P < 0.001$), environmental–situational phobia ($\chi^2(2) = 5.9$, $P < 0.05$) and total score ($\chi^2(2) = 12.8$, $P < 0.005$). As can be seen in Fig. 1, the highest percentages of children with (sub)clinical SCARED scores were found in the high behavioral inhibition group, whereas the percentages of the middle behavioral inhibition group fell in between. In line with this, the percentage of children who had SCARED scores in the (sub)clinical range for two or more anxiety disorders was considerably higher in the high behavioral inhibition group (52.9%) than in the middle and low behavioral inhibition group (20.5 and 2.1%, respectively) ($\chi^2(2) = 22.0$, $P < 0.001$).

4. Discussion

In the past ten years or so, a number of studies predominantly relying on samples of preschool children, has suggested that behavioral inhibition is a risk factor for developing anxiety disorders (e.g. Biederman et al., 1995). In these studies, behavioral inhibition was

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1 Reliable cutoff scores are not available for SCARED panic disorder, obsessive–compulsive disorder, social phobia and traumatic stress disorder.
assessed by observing children in laboratory settings with unfamiliar agemates or adults. Positive indicators of behavioral inhibition include long latencies to initiate interactions and low frequencies of communication (e.g. talking, smiling and laughing). In the current study, behavioral inhibition was assessed in 12–14-year old children by means of self-report. While it is not known how self-reported behavioral inhibition relates to laboratory assessed behavioral inhibition, the present results are highly similar to those of studies in which behavioral inhibition measures were based on laboratory observations. Thus, children who classified themselves as high on behavioral inhibition were found to have higher levels of anxiety, worry and depression compared to children who classified themselves as low or middle on behavioral inhibition. Moreover, children high on behavioral inhibition more frequently exhibited (multiple)anxiety disorders symptoms in the subclinical range.

An additional result of the present study has to do with the concurrent validity of the SCARED. As anticipated, behavioral inhibition (BIS) correlated with SCARED social phobia, worry (PSWQ-C) was strongly associated with SCARED generalized anxiety disorder, and depression was substantially related to SCARED general anxiety disorder and separation anxiety disorder. Note that the latter categories are generally considered to be the major childhood anxiety disorders. These findings are well in agreement with previous studies on the concurrent validity of the SCARED (Muris, Merckelbach, Van Brakel, Mayer, & Van Dongen, 1998; Muris et al., in press b; Muris, Merckelbach, Moularet, & Gadet, submitted for publication b).

One could counter that the correlations between self-reported behavioral inhibition and SCARED found in the present study are tautological in nature, i.e. that our self-report measure of behavioral inhibition taps anxiety levels which, of course, are positively correlated with standard measures of fear and anxiety (e.g. SCARED). Such a line of reasoning is not convincing for two reasons. First, our self-report measure of behavioral inhibition asked for withdrawal behavior in social situations. If this approach would yield symptomatological rather than trait information, one would expect strong correlations with social phobia, but not with, say, specific phobias. This, however, was not the pattern of results that was found in the current study. As was the case in studies relying on laboratory measures of behavioral inhibition, our self-report measure correlated with a wide range of anxiety categories. Second, and most importantly, the present study’s reliance on a self-report index of behavioral inhibition is not new. Previous studies by Reznick et al. (1992) also evaluated the usefulness of a self-report measure of behavioral inhibition. In one of these studies, adult undergraduates were asked to rate their level of behavioral inhibition. Results indicated that self-reported behavioral inhibition was positively associated with measures of anxiety and depression. In another study of Reznick et al., patients who had been treated for panic disorder or depression were found to report higher levels of behavioral inhibition than normal subjects. Altogether, the data of the study of Reznick et al. (1992) provide support for the validity and usefulness of self-reported behavioral inhibition.

Why would children with high behavioral inhibition be at risk for developing anxiety disorders? Kagan et al. (1987) have speculated that inhibited children have a lowered threshold for arousal in subcortical (e.g. amygdala, hypothalamus) circuits, especially in unfamiliar situations. This lowered threshold would make children more prone to develop serious anxiety complaints. So far, researchers have relied on time-consuming laboratory procedures in order
to detect behaviorally inhibited children. The present study suggests that it is possible to identify these anxiety-prone children in an easy way by means of self-report.

The present findings suggest that girls are more behaviorally inhibited than boys. Not only had girls higher BIS scores than boys, they also classified themselves more frequently as middle or high on behavioral inhibition. Although there is some evidence that extreme shyness is more common among girls than among boys (Stevenson-Hinde & Glover, 1996), little is known about sex differences in behavioral inhibition. However, epidemiological research generally shows that there are more girls than boys with an anxiety disorder (Costello & Angold, 1995). If one assumes that behavioral inhibition is a serious risk factor for developing an anxiety disorder, it is not surprising that this temperamental factor is more frequently found in girls than in boys.

Childhood anxiety and anxiety disorders are not only interesting in their own right. It is a well-established fact that a number of adult anxiety complaints have their onset in childhood or adolescence (e.g. Öst, 1987). Furthermore, there are good reasons to believe that certain learning experiences (e.g. aversive conditioning, modeling and to a lesser degree exposure to negative information; e.g. Rachman, 1991) play a critical role in the transition of mild childhood fears and anxiety complaints to adult disorders (Muris & Merckelbach, 1998). Meanwhile, aversive learning experiences might not be sufficient to produce full-blown pathological anxiety. For example, even though spider phobic children more often report conditioning and modeling than do nonfearful controls, such experiences are also found among these nonfearful controls (Merckelbach & Muris, 1997). Thus, it is tempting to assume that the etiology of several anxiety disorders originates from an interaction between learning experiences and temperamental factors like behavioral inhibition. A close analysis of the details of this interaction warrants future study.

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References


