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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

EXAMINATION OF THE OVERLAP BETWEEN DSM-III-R
OVERANXIOUS DISORDER AND DSM-IV GENERALIZED ANXIETY DISORDER
IN CHILDHOOD

A thesis submitted in partial fulfillment of

the requirements for the degree of

MASTER OF SCIENCE

in

PSYCHOLOGY

by

Candice A. Alfano

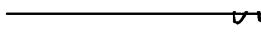
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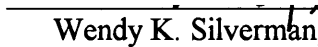
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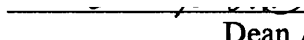

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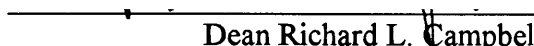

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DEDICATION

I dedicate this thesis to my friend Charles, for his unremitting support.

ACKNOWLEDGMENTS

I would like to thank the members of my committee for their guidance and support of this project. Also, thank you to all of those graduate and undergraduate students at CAPP who assisted me in this project, and whose efforts were always as diligent as my own. To Armando Pina, whose support and assistance were interminable, I would like to thank for his giving so often of himself and his time. Finally, a very personal thanks to Wendy Silverman, who consistently believed in my abilities from the very first day we met. I would like to thank Dr. Silverman for the central role she has played in the completion of this project, and in shaping my professional attitude and aspirations.

ABSTRACT OF THE THESIS

EXAMINATION OF THE OVERLAP BETWEEN DSM-III-R OVERANXIOUS DISORDER AND DSM-IV GENERALIZED ANXIETY DISORDER IN CHILDHOOD

by

Candice A. Alfano

Florida International University, 2000

Miami, FL

Professor Wendy K. Silverman, Major Professor

Since DSM-III-R criteria for Overanxious Disorder (OAD) was subsumed under Generalized Anxiety Disorder (GAD) in DSM-IV, three studies have investigated the overlap between the diagnoses. Although two studies have identified children meeting both OAD and GAD criteria (OAD/GAD group), a third study has identified children who met criteria for OAD, but not GAD (OAD group). Based on finding these two groups of children, we examined whether children in the OAD group (n= 30) could be differentiated from children in the OAD/GAD group (n=81) based on self and parent report of anxious symptoms and level of functional impairment. Conditional probability rates were also calculated for each of the DSM anxious symptoms to determine their overall clinical-utility. Findings revealed that the OAD group of children experienced fewer anxious symptoms than children in the OAD/GAD group, though both groups showed some amount of impairment. The implications for research and practice are discussed.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.....	1
II. LITERATURE REVIEW.....	3
Diagnostic Issues.....	3
Clinical Symptoms of Anxiety.....	4
The Issue of Functional Impairment.....	5
III. METHOD.....	7
Participants.....	7
Measures.....	7
Procedures.....	7
Conditional Probability Rates.....	9
III. RESULTS.....	11
Group Characteristics.....	11
Endorsement of Specific GAD Symptoms by Children and Parents.....	11
Utility and Efficiency of GAD Symptoms using Conditional Probabilities.....	13
Endorsement of Specific OAD Symptoms by Children and Parents.....	16
Utility and Efficiency of OAD Symptoms using Conditional Probabilities.....	16
Indices of Functional Impairment.....	17
IV. DISCUSSION.....	19
V. LIST OF REFERENCES.....	27

LIST OF TABLES

TABLE	PAGE
1. Socio-demographic Characteristics.....	29
2. Criteria for DSM-III-R OAD and DSM-IV GAD from the ADIS-C/P.....	30
3. Conditional Probabilities and Base Rates for DSM-IV GAD Symptoms.....	31
4. Conditional Probabilities and Base Rates for Uncontrollability of GAD Symptoms.....	32
5. Conditional Probabilities and Base Rates for DSM-IV GAD Somatic Symptoms.....	33
6. Conditional Probabilities and Base Rates for DSM-III-R OAD Symptoms.....	34

INTRODUCTION

With the publication of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 1994) several changes were made concerning the classification of anxiety disorders in children. Beyond the most major change, namely, elimination of the main category, “Anxiety Disorders of Childhood and Adolescence,” another important change was the removal of the subcategory, “Overanxious Disorder” (OAD). The main reason cited for the elimination of OAD was that the threshold for diagnosis was thought to be too low and the symptoms too general or non-specific (Werry, 1991). Hence, results from epidemiological studies revealed prevalence rates of OAD that were thought to be exaggerated (Bell-Dolan, Last & Strauss, 1990; McGee et al., 1990), suggesting that many children were receiving a clinical diagnosis of OAD in the absence of clear functional impairment.

In light of the above, OAD was removed from DSM-III-R and subsumed under Generalized Anxiety Disorder (GAD) in DSM-IV. DSM-IV criteria for GAD emphasize not just that children report excessive worry, but also that children report difficulty in controlling their worry. Additionally, DSM-IV criteria for GAD require that children experience at least one additional symptom (from a list of six symptoms) associated with their anxiety/worry (i.e., restlessness, being easily fatigued, difficulty concentrating, irritability, muscle tension, sleep disturbance). Lastly, DSM-IV GAD criteria require that the child must show significant impairment in functioning in terms of either social, occupational (school for children), and/or other important areas.

Since the publication of DSM-IV few studies have examined the issue of diagnostic consistency between OAD and GAD criteria (Kendall & Warman, 1996; Tracey, Chorpita, Douban, & Barlow, 1997; White-Lumpkin et al., 1996). Among the studies which have examined the issue of overlap, discrepant findings have been reported. For example, while some studies have reported that the two sets of diagnostic criteria identify the same group of anxious children (Kendall & Warman, 1996; Tracey et al., 1997), another study has reported finding two distinct groups of anxious children (White-Lumpkin et al., 1996): children meeting both OAD and GAD criteria (OAD/GAD group); and children meeting OAD but not GAD criteria (OAD group). The present study is based on finding these two groups of anxious children. In seeking to elaborate upon this finding, one objective of this study was to examine the specific OAD and GAD symptoms endorsed by these children and their parents across both groups. Further, the clinical utility of these symptoms was evaluated using conditional probabilities, in terms of how well/poorly each of these symptoms identified and discriminated between the children who comprised each of the two groups. Lastly, because it remains unclear whether children with OAD experience functional impairment, the issue of impairment was examined across the groups, along a number of indices.

LITERATURE REVIEW

Diagnostic Issues

To date, there have been only three studies that have examined the changes made from DSM-III/R to DSM-IV in terms of OAD and GAD criteria (Kendall & Warman, 1996; Tracey, Chorpita, Douban & Barlow, 1997; White-Lumpkin et al., 1996). All three studies used some modified version of the Anxiety Disorders Interview Schedule for Children (ADIS-C/P; Silverman & Nelles, 1988) for DSM-IV, and all used samples of children who presented to childhood anxiety disorders specialty clinics. Specifically, based on parent interview data, Kendall and Warman found that 21 children (ages 9 to 13 years) out of a sample of 40 children met DSM-III-R diagnostic criteria for OAD. All but one of the 21 children who met OAD criteria also met DSM-IV criteria for GAD. Similar findings were obtained using child interview data. In another study, Tracey et al. found complete overlap between children's diagnoses of DSM-III-R OAD and DSM-IV GAD using combined child and parent interview data. That is, out of 62 clinic-referred children (ages 7 to 17 years), 31 met diagnostic criteria for OAD. All 31 of these children also met diagnostic criteria for GAD. White-Lumpkin et al. also found overlap between children's diagnoses of DSM-III-R OAD and DSM-IV GAD using combined child and parent interview data; however, not to the complete degree (or close to the complete degree) found by Kendall and Warman and Tracey et al. More specifically, out of 49 clinic-referred children (ages 7 to 17 years), 13 (27%) met diagnostic criteria for both OAD and GAD. However, 10 (20%) of the 49 children met criteria for OAD, but did not fulfill GAD criteria.

In light of the discrepant findings regarding the overlap of OAD and GAD, our research group at the Child Anxiety and Phobia Program at Florida International University in Miami has continued to assess all children referred for anxiety problems along both DSM-III-R and DSM-IV criteria in order to further examine the issue of diagnostic overlap with a larger sample. Findings from these clinical assessments have revealed that although there continues to be children who meet diagnostic criteria for both OAD and GAD (consistent with Kendall & Warman, 1996, and Tracey et al., 1997), there also is a substantial number of children who meet criteria for a OAD diagnosis, but not a GAD diagnosis (consistent with White-Lumpkin et al., 1996)¹. Thus, one aim of the present study was to document the existence of these two groups of children (i.e., children who meet DSM-III-R OAD criteria but not DSM-IV GAD criteria, an OAD group, and children who meet for both DSM-III-R OAD and DSM-IV GAD, an OAD/GAD group).

Clinical Symptoms of Anxiety

In order to better understand why some anxious children do not fulfill DSM-IV GAD criteria, an additional aim of the present study was to determine the specific anxious symptoms endorsed by the children (and their parents) that comprise each of these two groups. Previously, it has been suggested (e.g., Tracey et al., 1997; Werry, 1991) that children with OAD may not meet DSM-IV GAD criteria for several reasons. Reasons have included the potential role of developmental differences in children's articulation of the concept of "uncontrollability" of worry (Tracey et al., 1997), and a lack of somatic symptoms associated with childhood anxiety (e.g., Werry, 1991), as both uncontrollability of worry and somatic symptoms are required for a GAD diagnosis. Therefore, the present

study examined children's and parents' endorsement of uncontrollability and somatic symptoms, as well as the other specific DSM-III-R OAD and DSM-IV GAD symptoms (e.g. specific worries), to further our understanding about why some children meet criteria for OAD, but not GAD. In addition, beyond the endorsement rates of anxious symptoms across the two groups, conditional probability rates were used to evaluate the efficiency (i.e. clinical utility) of each OAD and GAD symptom in identifying these two groups of children. For example, it was questioned whether the symptoms with the highest rates of endorsement (i.e., prevalence), also possessed the greatest efficiency in being able to discriminate children who were in the OAD/GAD group from children in the OAD group, respectively. More specifically, base rates, sensitivity rates, specificity rates, positive predictive power and negative predictive power were calculated for each of the OAD and the GAD symptoms across the two groups, to determine the symptoms which possessed the best/worst overall utility, in terms of both their prevalence and efficiency.

The Issue of Functional Impairment

One of the major reasons cited for the elimination of OAD from the DSM were the findings of several epidemiological studies, revealing high OAD prevalence rates in non-clinical samples of children (e.g., Bell-Dolan, Last & Strauss, 1990; McGee et al., 1990). These high prevalence rates suggested that many children were receiving a clinical diagnosis of OAD in the absence of clear functional impairment. Additionally, based on this issue of unclear impairment, past research findings have suggested that OAD in children may actually represent a prodromal state of anxiety (Beidel, 1991; Beidel, Silverman & Hammond-Laurence, 1996; Spence, 1997). According to this view, OAD is

not a distinct clinical condition; hence, it is *not* GAD, or for that matter, any other clinical condition. Rather, OAD may constitute a specific vulnerability toward the development of a more severe disorder, of which GAD might be one (Gittelman, 1984). Accordingly, children with OAD might be expected to show some amount of impairment, but it is likely to be less severe and/or pervasive than the impairment experienced by children with GAD (Beidel, 1991; Beidel et al., 1996). Based on the above, it was questioned whether children in the OAD group did not fulfill GAD criteria simply due to a lack of functional impairment, as impairment constitutes a specific requirement for a GAD diagnosis (unlike former OAD criteria). In this regard, the present study examined several specific indices of impairment in order to determine whether the two groups of children could be differentiated in terms of the level of interference their anxious symptoms caused in their lives (i.e. in relation to school, family, peers, etc.). A number of variables were selected for examination that have previously served as indices of impairment in past studies (e.g., Jensen, 1997; Kearney, Eisen, & Silverman, 1995). These included number of comorbid diagnoses, child and parent ratings of interference caused by children's anxious symptoms, and school refusal behavior.

METHOD

Participants

The total number of participants were 289 children and adolescents (hereafter referred to as children) who presented to the Child Anxiety and Phobia Program (CAPP) housed within the Child and Family Psychosocial Research Center of Florida International University in Miami, Florida. The children were 155 boys and 134 girls, ages 6 to 17 years old, with a mean age of 10.2 years ($SD=3.00$). Most of the children in the sample were referred by school counselors, mental health professionals or pediatricians. All children were referred to the CAPP program due to difficulties with fear, anxiety or both. Both the child and parent, usually the mother, participated in the assessment procedures.

Measures and Procedures

Anxiety Disorders Interview Schedule for DSM-IV: Child version (ADIS-C/P for DSM-IV; Silverman & Albano, 1996). The ADIS-C/P was administered to all referred children and their parents. The ADIS-C and ADIS-P are semi-structured diagnostic interviews that emphasize the anxiety disorders. The interviews permit the clinician to assess and diagnose other major childhood disorders, including the affective and externalizing disorders according to DSM criteria (APA, 1994). All child and parent interviews included GAD diagnostic criteria according to DSM-IV, a section which included OAD diagnostic criteria according to DSM-III-R (from the DSM-III-R version of the ADIS-C/P; Silverman & Nelles, 1988), and a section inquiring about school refusal behavior. Children and their parents were asked about the presence/absence of each symptom under OAD and GAD criteria, as well as each of the questions inquiring about

school refusal behavior. Because GAD criteria specifies that children experience difficulty in controlling worry, children and parents also were asked about the child's uncontrollability of worry (for each particular worry item endorsed under GAD criteria). All sections (i.e., OAD and GAD) were given in their entirety, regardless of whether the child received a diagnosis for that set of criteria. Children and parents were then asked to rate the degree to which the particular anxiety symptoms they endorsed interfered with or impaired the children's lives (e.g., in school, with family, with peers, that led to internal child distress), based on a 9-point likert scale (from 0 to 8). A visual prompt, the "Feeling Thermometer" was used to facilitate both children's and parents' understanding of ratings. The rating scale uses adverb qualifiers underneath selected points (e.g., 0="not at all", 2="a little bit", 4="some", 6="a lot", 8="very, very, much") to help respondents anchor their ratings.

All diagnostic interviews were conducted by either the program director (WKS), a post doctoral psychologist, or an advanced graduate student in psychology. Diagnosticians were trained by observing live and video-taped interviews. Initial discrepancies were discussed to reach agreement in training sessions. All diagnosticians had to meet reliability criteria of 100% on five child-parent interviews before diagnosticians conducted an interview by themselves. In cases of multiple diagnoses the relative impact or interference of each diagnosis was used for ascertaining the primary diagnosis, the secondary diagnosis, etc., as delineated in the ADIS-C guide (see Albano & Silverman, 1996).

A sub-sample of the participants comprised the samples of previous reliability studies (i.e., Saavedra, unpublished manuscript; Silverman & Eisen, 1992). Reliability

reports for the GAD section of the DSM-IV version of ADIS-C/P (as well as for the other sections) have all been in the excellent range. For example, the kappa coefficients obtained for younger children (ages 6-11) ranged from .73 to .92, and the kappa coefficients obtained for the parent interview ranged from .65 to 1.00. For the DSM-III-R version of the ADIS-C/P, the OAD section has also obtained satisfactory reliability ratings. For example, kappa coefficients ranged from .52 to 1.00 for younger children (ages 6-11), and kappa coefficients ranged from .41 to .65 for the parent interview (Silverman & Eisen, 1992). For this study, a subsample of the child and parent interviews were videotaped and observed by independent judges blind to the diagnostic status of the children. Over 95% agreement on all primary diagnoses and 85% or higher agreement on all additional comorbid diagnoses was obtained.

Conditional Probability Rates

Item endorsement on the ADIS-C/P was used to examine the efficiency of each specific symptom listed under OAD and GAD criteria. In particular, five indices were examined: base, sensitivity, specificity, positive predictive power and negative predictive power rates. Base rates (BR) represent the percentage of children in the entire sample that endorsed each symptom. Sensitivity (SEN) refers to the conditional probability that a child with a particular diagnosis will have a particular symptom. Specificity (SPE) yields the conditional probability that a child without a particular diagnosis will not have a particular symptom. Although SEN and SPE rates indicate the likelihood of a particular symptom being present/absent in particular diagnostic group, they yield little information about each symptom's efficiency as diagnostic criteria (e.g., Laurent, Landau, & Stark, 1993). That

is, a symptom which is characteristic of a particular diagnosis (i.e., receives a high SEN rating), is not necessarily a symptom that is efficient (i.e. discriminate) in determining whether a particular diagnosis is present. By contrast, positive predictive power (PPP) and negative predictive power (NPP) indicate the probability that a particular diagnosis is present (i.e., should be given) given the presence of a particular symptom, and that a particular diagnosis is absent (i.e., should not be given) given the absence of a particular symptom, respectively. Unlike SEN and SPE rates, PPP and NPP rates take into account the base rates of symptoms within a particular sample. Hence, they provide a more practical index of the efficiency of these symptoms, regardless of the prevalence rates of these items (e.g., Laurent et al., 1993). The calculations for these statistics are included in Tables 3 through 6.

For the purpose of comparison, conditional probability rates ranging from .00 to .29 were considered to be low, rates ranging from .30 to .69 were considered to be moderate, and rates ranging from .70 to 1.0 were considered to be high (see Laurent et al., 1993). Based on the procedure used by Laurent et al. (1993), a symptom that obtained a “moderate” or “high” rating (i.e. SEN, SPE, PPP or NPP), was considered to be clinically significant.

RESULTS

Group Characteristics

Eighty-one (28%) out of the 289 children met diagnostic criteria for both DSM-III-R OAD and DSM-IV GAD (OAD/GAD group). Thirty (10%) out of the 289 children met diagnostic criteria for DSM-III-R OAD but not DSM-IV diagnostic criteria for GAD (OAD group). Therefore, the final distribution of participants in this study consisted of 111 children, who were 62 boys and 49 girls, ages 6 to 17 years, with a mean age of 10.6 years (SD=2.85). Table 1 presents the socio-demographic information for the two groups. Chi-square analyses revealed no significant differences in terms of age, gender, socio-economic status, and ethnicity/race across the two groups.

Endorsement of Specific GAD Symptoms by Children and Parents

We first examined whether children in the OAD/GAD group and children in the OAD group were significantly different from each other in terms of the total number of GAD worry symptoms endorsed by children and parents, respectively (see Table 2 for specific OAD and GAD symptoms). We next examined whether these two groups of children were significantly different from each other in terms of the rates in which each specific GAD symptom was endorsed by children and parents, respectively. Regarding the total number of symptoms endorsed, both children and parents in the OAD group endorsed significantly less GAD worry items than children and their parents in the OAD/GAD group [$t(109)=7.99, p<.05$; $t(109)=8.37, p<.05$, respectively]. Chi-square analyses for each specific GAD worry item across the two groups revealed significant

differences for each of these items, with the OAD/GAD group endorsing each item more frequently than the OAD group, based on both child and parent report.

We also examined whether children in the OAD/GAD group and children in the OAD group were significantly different from each other in terms of the total amount of uncontrollability they experienced for GAD worry symptoms, as endorsed by children and parents. We then examined whether the two groups of children were significantly different from each other in terms of the rates in which uncontrollability of each specific GAD symptom was endorsed by children and parents. Regarding the total number of uncontrollable worry symptoms endorsed, both children and parents in the OAD group endorsed significantly less uncontrollability of their worries than children and their parents in the OAD/GAD group [$t(109)=4.71, p<.05$; $t(109)=9.56, p<.05$]. Chi-square analyses for uncontrollability of each specific GAD worry symptom across the two groups revealed significant differences for each of these items, with the OAD/GAD group endorsing uncontrollability of each worry more frequently than the OAD group, based on both child and parent report. In other words, the OAD/GAD children were less able to control each specific GAD worry symptom than the OAD children.

We also examined whether children in the OAD/GAD group and children in the OAD group were significantly different from each other in terms of the total number of GAD somatic symptoms endorsed by children and parents. Additionally, we examined whether these two groups of children were significantly different from each other in terms of the rates in which each specific somatic symptom was endorsed by children and parents. Regarding the total number of somatic symptoms endorsed, both children and parents in

the OAD group endorsed significantly less GAD somatic symptoms than children and their parents in the OAD/GAD group [$t(109)=7.30, p<.05$; $t(109)=7.67, p<.05$]. Chi-square analyses for each (of the six) somatic symptom across the two groups revealed significant differences for each of these items, with the OAD/GAD group endorsing each item more frequently than the OAD group, based on both child and parent report.

Utility and Efficiency of GAD Symptoms using Conditional Probabilities

Using conditional probabilities, we examined how well/poorly each symptom identified the children who were in the two groups, as well as the diagnostic efficiency of these items. These GAD symptoms included specific worries (Table 3), uncontrollability of specific worries (Table 4), and somatic symptoms (Table 5) across both groups.

Specific GAD Worries. Mean base rates of 37% (child report) and 41% (parent report) were obtained for all of the specific GAD worry items across both groups. Worry about “school” was the most common worry for children across both groups. However, sensitivity rates revealed that worry about “school” (SEN=.59 for child, and .78 for parent) was much more characteristic of the children in the OAD/GAD group than children in the OAD group (SEN=.23 child, .27 parent). Worry about “health of others” also was highly characteristic of the OAD/GAD children (SEN=.70 child, and .61 parent). However, because this item also obtained one of the highest rating of specificity in this group (unlike worry about “school”), this indicated specific worry about the health of others to not only be characteristic of the OAD/GAD group, but to also rarely be present in children in the OAD group. Finally, because PPP rates and NPP rates for this item were also high and moderate, respectively, this specific worry item may provide one of the most

efficient inclusion/exclusion criteria for children with GAD. Although PPP and specificity rates for specific worry items were all high for the OAD/GAD group, many items received low base rates and/or moderate NPP rates, indicating that these items may only be partially useful in the diagnostic process. Overall, for the OAD group, specific GAD worry items were moderately useful as exclusion criteria, whereby their absence was moderately predictive that a GAD diagnosis would also be absent.

Uncontrollability of Worry. Overall, uncontrollability of worry had a low to moderate occurrence rate across both groups, with mean base rates of 25% (child report) and 31% (parent report). In accordance with the specific worry item that children across both groups most commonly reported, both groups of children had the most difficulty in controlling their worry about school. However, uncontrollability of this worry, as well as all of the worry items, was more characteristic of the OAD/GAD group than the OAD group. In fact, some items of uncontrollability were completely uncharacteristic of the OAD group, with SEN rates of .00 based on child and/or parent report (i.e., uncontrollability of worry about “interpersonal things, little things, health of self, health of others, family, and world things”). Conversely, specificity and PPP rates revealed these same items to have overall perfect utility and efficiency (i.e., SPE and PPP=1.0) within the OAD/GAD group. That is, all children who reported uncontrollability of these worries were in the OAD/GAD group. However, SEN rates for uncontrollability of some of these items (e.g., “world things and little things”) were quite low for this (OAD/GAD) group, indicating that although they may be uncommonly found in children without GAD, they were not necessarily characteristic of children in the OAD/GAD group. PPP rates for

uncontrollability of worries were quite low (or .00) overall for the OAD group, indicating that most of these children did not have difficulty in controlling their worries.

Somatic symptoms. Overall, base rates for somatic symptoms across both groups were moderate, with means of 46% (child) and 48% (parent) for all symptoms. Based on SEN rates the items “can’t sit still/relax” (SEN=.73 child, and .64 parent) and “can’t concentrate” (SEN=.64 child, and .69 parent) were most characteristic of children within the OAD/GAD group. Although none of the somatic symptoms were particularly characteristic of the OAD children, “irritability” (SEN=.10 child, and .20 parent) was most commonly (though non-significantly) found. All of the somatic symptoms obtained high SPE rates within the OAD/GAD group, ranging from .87 to .93, also indicating the somatic symptoms to be uncommonly found within the OAD group. By contrast, the items which were most specific to the OAD group included “muscle aches” (SPE=.56 child, and .54 parent) and “tires easily” (SPE=.49 child, and .47 parent), though these items had the lowest base rates among all somatic symptoms, limiting their overall utility. In terms of the PPP ratings obtained for the items, all six somatic symptoms obtained a high utility rating as inclusion criteria for children in the OAD/GAD group, with PPP rates also ranging from .90 to .97. However, because the NPP ratings of these items within the OAD/GAD group were somewhat lower (ranging from .37 to .56), the somatic symptoms do not appear to be as useful in ruling out a GAD diagnosis based on their absence. That is, although somatic symptoms may be commonly found in children with GAD, they are not necessarily specific to this disorder. NPP rates for somatic symptoms within the OAD group were also moderate, ranging from .44 to .63.

Endorsement of Specific OAD Symptoms by Children and Parents

In examining the OAD items, no significant differences were obtained across groups in terms of the total number of OAD symptoms endorsed by children and their parents. An examination of the specific OAD symptoms endorsed by children and parents revealed no significant differences across the two groups as well. However, one OAD symptom, namely “worries about things before they happen”, was endorsed significantly more by parents of children in the OAD/GAD group than by parents of children in the OAD group [$\chi^2(1)=5.00, p<.05$].

Utility and Efficiency of OAD Symptoms using Conditional Probabilities

We also calculated the conditional probability rates for the OAD symptoms included in the ADIS-C/P (Table 6). First, overall base rates of symptoms were higher for the OAD items than the GAD items, ranging from .33 to .86 across both group. Sensitivity rates for the OAD symptoms among the OAD/GAD group revealed that “worries about things before they happen” (SEN=.74 child, .90 parent) was the most characteristic symptom among children in this group. This symptom was also characteristic of the OAD group (SEN=.63 child, and .73 parent), however “needs reassurance”(SEN=.60 child, .80 parent) and “worries about performance” (SEN=.57 child, .77 parent) were the most characteristic symptoms of this group. The symptom “worries about little things” was the symptom least characteristic of all children according to children and parents across both groups (SEN=.47 child, and .36 parent OAD/GAD group; SEN=.40 child, and .27 parent OAD group). This item also obtained the lowest base rates according to child and parent reports. Nonetheless, of all OAD items, this item

obtained the highest SPE rates across the two groups, indicating that although it may not be common in children with OAD, it is also uncommon in children without OAD. PPP rates indicated the OAD items to have greater utility as inclusion criteria for the OAD/GAD group than the OAD group (mean PPP=.75 OAD/GAD; mean PPP=.25 OAD), meaning that these items are more useful in identifying children with OAD and GAD than children with OAD, but not GAD. Most of the OAD symptoms had low to moderate utility as exclusion criteria across both groups.

Indices of Functional Impairment

Because we questioned whether children in the OAD group did not fulfill GAD criteria simply due to a lack of functional impairment, we selected a number of variables for examination that have previously served as indices of impairment in past studies (e.g., Jensen, 1997; Kearney, Eisen & Silverman, 1995). These included number of comorbid diagnoses, child and parent ratings of interference given to OAD symptoms, and school refusal behavior.

Comorbid Diagnoses. Results indicated that the children in the OAD/GAD group had significantly greater number of comorbid diagnoses than the children in the OAD group [$t(109)=2.54, p<.05$]. More specifically, the children in the OAD group had a mean of 3.3 diagnoses, compared to a mean of 4.0 diagnoses for the children in the OAD/GAD group. The most common comorbid diagnosis for the children in the OAD group was specific phobia. For the children in the OAD/GAD group the most common comorbid diagnosis was separation anxiety disorder.

Ratings of Interference. All children and parents were asked to rate the amount of interference upon completing the OAD and GAD sections of the ADIS-C/P, indicating the amount of interference the children's anxiety symptoms had caused. Ratings of interference were based on all of the different areas of the children's lives (i.e. school, family, peers, internal distress). No significant differences were found between the two groups for ratings of interference as reported by both children and parents, with both groups reporting significant impairment as a result of their anxious symptoms.

School Refusal Behavior. School refusal behavior was assessed via the ADIS-C/P. Chi-square analyses revealed no significant differences between the OAD and OAD/GAD groups for child [$\chi^2(1)=.074$, $p<.48$] or for parent [$\chi^2(1)=2.89$, $p<.07$] report. That is, both groups of children experienced significant amounts of school refusal behavior resulting from their anxious symptoms. Specifically, according to parent report, 27% of children in the OAD group and 44% of children in the OAD/GAD group exhibited school refusal behavior. According to the OAD group of children, 37% reported school refusal behavior, compared to 40% of OAD/GAD children.

DISCUSSION

To our knowledge, the present study is the first to empirically document the existence of two groups of clinically anxious children; children fulfilling both OAD and GAD criteria, and children fulfilling OAD, but not GAD criteria. This finding is considered important in light of the fact that previous studies have suggested a complete (or nearly complete) overlap in these two sets of criteria (i.e., Kendal & Warman, 1996; Tracey et al., 1997). We have also shown some of the distinguishing characteristics of these two groups, based on child and parent endorsement of specific DSM criteria. Along these lines, we used conditional probabilities to evaluate the clinical utility of each OAD and GAD symptom in terms of how well (or how poorly) they were able to identify these two groups of children. Lastly, we examined the groups according to their levels of functional impairment across several indices.

Our initial expectation, based on previous reports, was that the children in the OAD group did not meet DSM-IV GAD criteria due to: (1) an inability to elaborate upon the notion of uncontrollability of worry (Tracey et al., 1997); (2) a lack of somatic symptoms accompanying their worry (e.g., Werry, 1991); and/or (3) a lack of functional impairment associated with their anxious symptoms (e.g., Beidel, 1991). Turning first to the issue of uncontrollability of worry, although the OAD group did report significantly less uncontrollability in association with their worry than the OAD/GAD group, interestingly, it was also the non-specific nature of these (OAD) children's worries that precluded many of them from receiving a GAD diagnosis. That is, according to GAD criteria, children must report worry about a number of specific areas of their lives (e.g.,

school, family, peers, etc.). Indeed, some of the children in the OAD group endorsed a number of the specific worry items listed under GAD criteria, but rarely did these children (or their parents) report that they were unable to control these worries. Further evidence of the non-specific (i.e. more global) nature of the OAD children's worry comes from the lack of sensitivity and positive predictive power of the specific GAD worry items for this group (see Table 3). Overall, these SEN and PPP rates indicate that the GAD worry items were highly uncharacteristic of the OAD group of children, and when they were endorsed by these children, they did not represent symptoms that were useful as inclusion criteria for this group.

It may also be the case that because children in the OAD group generally worry about things that are non-specific and/or more general, their worry constantly shifts from one area of their lives to another, rather than remaining fixated and stable over time. Further, because the focus of their worry is constantly shifting, it is possible that children with OAD (but not GAD) may perceive most of their specific worries as “being under control” compared to children who are consistently unable to stop ruminating about the same things. Although the issue of uncontrollability of worry requires further study, these differences (both in terms of number and uncontrollability of specific worries) suggest that children with GAD experience a more complex syndrome than children with OAD. Additionally, it should also be noted that no significant differences were found between the two groups of children in this sample in terms of their mean age or age range. This finding is contrary to the suggestion that because older children (e.g., 12 years and older) are better able to articulate their worry, they are also more likely to endorse a greater

number of specific worry items (e.g., Strauss, Lease, Last & Francis, 1988) and/or the uncontrollability of worries (e.g. Tracey et al., 1997) as compared to their younger counterparts.

In light of the fact that both groups met criteria for an OAD diagnosis, we did not expect the groups to differ in terms of their endorsement of the OAD items. However, based on both child and parent endorsement of the OAD items, one significant difference emerged between the two groups. The OAD item; “worry about things before they happen” was endorsed significantly more by parents of children in the OAD/GAD group than parent of children in the OAD group. This item (like most of the other OAD items), is broadly defined to included worry about numerous areas of children’s lives, such as starting school, going to visit the doctor, an upcoming social event, and so on. Although this item was frequently endorsed by children and parents across both groups (see base and sensitivity rates on Table 6), the parents of the OAD/GAD children may have been more likely to observe higher levels of what DSM-IV GAD criteria defines as “apprehensive expectation” in their children. More specifically, because children receiving a GAD diagnosis reported a greater number of specific and uncontrollable worries (as well as more somatic symptoms) than the children without a GAD diagnosis, these worries may ultimately result in the OAD/GAD children’s apprehension toward a greater number of life events, and consequently, a more anxious state overall. This finding would support the suggestion that OAD criteria represents a prodromal state of anxiety (Beidel, 1991; Beidel et al., 1996), with a specific risk for the development of a more severe disorder. Specifically, the generalized type of worry indicated in the OAD items may represent a

risk factor for developing a greater number of specific and uncontrollable worries, that eventually result in a more severe disorder overall. Although we cannot draw any firm conclusions in the absence of longitudinal data, as Gittelman (1984) has pointed out, GAD may likely be one of many outcomes resulting from such a generalized type of worry (i.e. OAD criteria).

In reference to the issue of somatic symptoms raised by previous research, the children in the OAD/GAD group reported a greater number of GAD somatic symptoms than the children in the OAD group. Further, because the SEN and SPE rates for these symptoms were quite low within the OAD group (see Table 5), this indicated that a low prevalence of these symptoms in children with OAD precluded many of them from receiving a GAD diagnosis, as has been suggested (e.g., Werry, 1991). However, it is also interesting to note the lack of significant differences found between the two groups in terms of their endorsement of the fourth OAD item (i.e. “Do you experience headaches and/or stomachaches when you are worried?”). Approximately 50% the children in the OAD group endorsed this item, compared to approximately 65% of the children in the OAD/GAD group (based on child report). That is, conditional probability rates indicated headaches and/or stomachaches to be slightly more characteristic of children in the OAD/GAD group (i.e., SEN=.65 child, .74 parent) than children in the OAD group (SEN=.53 child, .60 parent OAD group). More importantly however, because this OAD item was a much stronger indicator of the presence of OAD within the OAD/GAD group (i.e., PPP=.77 child and parent), than in the OAD group (PPP=.23 child and parent), it

appears that although these symptoms (e.g., headaches and stomachaches) may be present in children with OAD, they seem to be non-contributory to the disorder (Werry, 1991).

This now brings us to the issue of functional impairment in children with OAD. Our investigation revealed that the children in the OAD/GAD group presented with a greater number of comorbid diagnoses than the OAD group. As mentioned by Beidel et al. (1996), a greater number of comorbid diagnoses are indicative of the presence of a more severe clinical syndrome, and accordingly, greater levels of impairment. Further, children in the OAD/GAD group most commonly presented with the comorbid diagnosis of separation anxiety disorder (SAD), compared to a most common comorbid diagnosis of specific phobia (SP) within the OAD group. SAD, like GAD, is generally characterized by constant rumination and/or worry about a feared event, which leads to the child's avoidant behavior. By comparison, SP possesses a strong behavioral component, whereby a child's avoidance is frequently thought to represent behavior which is learned. Hence, it appears that the common presence of SAD in children in the OAD/GAD group represents further evidence of a more complex syndrome in these children, characterized by greater amounts of rumination and worry.

Despite this difference in number and type of comorbid diagnoses however, the two groups did not differ in terms of their ratings of interference given to the anxiety symptoms they endorsed on the ADIS-C/P. This would indicate some amount of functional impairment to also be present among children in the OAD group. This finding was also supported by the findings for school refusal behavior. Specifically, differences between the two groups were non-significant, with 27% of children in the OAD group,

and 44% of children in the OAD/GAD reported as exhibiting school refusal behavior as a result of their anxiety (based on parent report).

Taken all together, these findings suggest that although children with GAD may generally be more impaired overall, children with OAD may also experience significant levels of functional impairment in their lives, despite the fact that they do not fulfill DSM-IV GAD criteria. Our findings also raise some concerns about whether the current nosology used to define excessive anxiety in children provides adequate coverage to identify all children who are at risk for developing severe syndromes in later years. In this regard, research has pointed toward this notion of functional impairment in children, rather than specific DSM criteria, as being a risk for severe pathology (Angold et al., 1999). In a recent prospective longitudinal study, Angold et al. found that children who were functionally impaired, but who did not necessarily fulfill DSM criteria for a disorder, possessed an increased risk toward developing a syndrome high in complexity and impairment in adolescence and adulthood. Hence, because the DSM does not specify the relative significance (i.e. weight) of each symptom required for a diagnosis, a child who experiences functional impairment, but who does not report specific and/or uncontrollable symptoms, may be equally at risk for developing a more complex syndrome as children who endorse each DSM-IV GAD symptom.

Although these findings provide preliminary support for DSM diagnostic criteria placing a greater emphasis on the notion of functional impairment, some limitations associated with this study are noted. First, the specific symptoms and levels impairment found for children in this sample may not generalize to non-clinical populations of

children, where fewer symptoms and/or lower levels of functional impairment may be found. Further, because many of the children in this sample were referred by school counselors, the high rates of school refusal behavior found for these children may not be found in differently-referred children. Also, because base and conditional probability rates vary across different settings, such as those found in inpatient populations versus those found in community samples, the item statistics (i.e., conditional probabilities) used in this study should be replicated with different populations of children. Finally, a different method of determining children's anxious symptomatology, such as a different interview schedule or childhood anxiety measures, may affect the pattern of symptoms reported. Nonetheless, because the ADIS-C/P utilizes specific DSM criteria to diagnose clinical levels of childhood anxiety, the symptoms examined in this investigation would seem the most efficient symptoms in this regard.

Despite these limitations, this study adds to the sparse literature examining the changes in diagnostic criteria for anxious children in DSM-IV. Future research which includes specific symptom endorsement and conditional probability rates can provide information on not only the specific symptoms children with excessive anxiety endorse, but also the overall utility and efficiency of each of these symptoms in identifying anxiety problems in children. Additionally, examination of the issue of functional impairment, in conjunction with the efficiency of specific anxious symptoms, will undoubtedly facilitate the accurate diagnosis of excessive anxiety in children which may not fulfill DSM criteria, but may nonetheless warrant treatment. Such investigations will provide useful information into the development of not only effective interventions for these children, but

may also provide insight into appropriate preventative programs for children who are at risk for developing such syndromes.

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Table 1. Socio-demographic Characteristics

Variable	<u>OAD/GAD group</u> (n=81)				<u>OAD group</u> (n=30)			
	n	%	M	SD	n	%	M	SD
Age (years)			10.7	2.79			10.4	3.05
Sex								
Male	40	49			22	73		
Female	41	51			8	27		
Ethnicity/Race								
Euro-American	32	40			14	47		
Hispanic-American	42	52			15	50		
African-American	3	4			1	3		
Other	4	4			0	0		
Socio-economic Status								
< \$15,000	18	22			4	13		
\$15,000to \$30,000	14	17			9	30		
> \$30,000	44	54			16	53		
Not Reported	5	6			1	3		

OAD= Overanxious Disorder; GAD= Generalized Anxiety Disorder.

Table 2. Criteria for DSM-III-R OAD and DSM-IV GAD from the ADIS-C/P

<u>DSM-III-R OAD Criteria:</u>	<u>DSM-IV GAD Criteria:</u>
Endorsement of four out of the following seven items;	Endorsement of each of the following criteria;
1-Worries about things before they happen.	A) Worry about a number of the following items (2 or more);
2-Worries about little things.	1-School
3-Worries about performance.	2-Performance
4-Experiences headaches/stomachaches when worried.	3-Interpersonal
5-Worries about impressions and appearances.	4-Little Things
6-Needs to be reassured.	5-Perfectionism
7-Unable to relax.	6-Health (self)
	7-Health (others)
	8-Family
	9-World Things
	B) Difficulty in controlling worry.
	C) The worry is associated with at least one of the following symptoms;
	1-Can't sit still/relax
	2-Tires easily
	3-Can't concentrate
	4-Irritability
	5-Muscle Aches
	6-Trouble sleeping
	D) Worry causes clinically significant impairment in functioning.

OAD= Overanxious Disorder; GAD= Generalized Anxiety Disorder; ADIS-C/P= Anxiety Disorders Interview Schedule for Children.

Table 3. Conditional Probabilities and Base Rates for DSM-IV GAD Symptoms

Worry /Symptom	BR	OAD/GAD (n=81)				OAD (n=30)			
		SEN	SPE	PPP	NPP	SEN	SPE	PPP	NPP
<u>ADIS-C</u>									
School	.50	.59	.77	.87	.41	.23	.41	.13	.59
Performance	.25	.32	.93	.93	.34	.07	.68	.07	.66
Interpersonal	.32	.40	.90	.91	.36	.10	.61	.09	.64
Little Things	.32	.42	.93	.94	.37	.07	.58	.06	.63
Perfectionism	.28	.36	.93	.94	.35	.07	.64	.06	.65
Health (self)	.45	.59	.93	.96	.46	.07	.41	.04	.54
Health (others)	.53	.70	.93	.97	.54	.07	.30	.03	.46
Family	.42	.54	.90	.94	.42	.10	.46	.06	.58
World Things	.26	.35	.97	.97	.35	.03	.65	.03	.65
M	.37	.47	.91	.94	.40	.09	.53	.06	.60
SD	.11	.13	.06	.03	.07	.06	.13	.03	.07
<u>ADIS-P</u>									
School	.64	.78	.73	.89	.55	.27	.22	.11	.45
Performance	.49	.62	.87	.93	.46	.13	.38	.07	.54
Interpersonal	.48	.61	.87	.92	.45	.13	.40	.08	.55
Little Things	.31	.38	.90	.91	.35	.10	.62	.09	.65
Perfectionism	.33	.41	.87	.89	.35	.13	.59	.11	.65
Health (self)	.34	.44	.93	.95	.38	.07	.56	.05	.62
Health (others)	.47	.61	.90	.94	.46	.10	.40	.06	.54
Family	.41	.52	.87	.91	.40	.13	.48	.09	.60
World Things	.23	.30	.97	.96	.34	.03	.70	.04	.66
M	.41	.52	.88	.92	.42	.12	.48	.08	.58
SD	.12	.15	.07	.02	.07	.07	.15	.02	.07

Note: OAD/GAD= Overanxious disorder and Generalized anxiety disorder group. OAD= Overanxious disorder group. ADIS-P= Anxiety Disorders Interview Schedule-Parent Version. ADIS-C= Anxiety Disorders Interview Schedule for Children. BR= base rate (children with symptom divided by total number of children); SEN= sensitivity (children in diagnostic group who have symptom divided by total children in diagnostic group); SPE= specificity (children not in diagnostic group who do not have symptom divided by children not in diagnostic group); PPP= positive predictive power (children with symptom who are in diagnostic group divided by total children with symptom); NPP= negative predictive power (children without symptom who are not in diagnostic group divided by total children without symptom).

Table 4. Conditional Probabilities and Base Rates for Uncontrollability of GAD Symptoms

Worry/ Uncontrollability	BR	OAD/GAD (n=81)				OAD (n=30)			
		SEN	SPE	PPP	NPP	SEN	SPE	PPP	NPP
<u>ADIS-C</u>									
School	.41	.54	.93	.96	.43	.07	.46	.04	.57
Performance	.15	.20	.97	.94	.31	.03	.80	.06	.69
Interpersonal	.22	.27	.93	.92	.32	.07	.73	.08	.68
Little Things	.18	.25	1.0	1.0	.33	.00	.75	.00	.67
Perfectionism	.15	.20	.97	.94	.31	.03	.80	.06	.69
Health (self)	.32	.43	1.0	1.0	.39	.00	.57	.00	.61
Health (others)	.37	.51	1.0	1.0	.43	.00	.49	.00	.57
Family	.28	.38	1.0	1.0	.38	.00	.62	.00	.62
World Things	.13	.17	1.0	1.0	.31	.00	.83	.00	.69
M	.25	.33	.88	.97	.36	.02	.67	.03	.64
SD	.10	.14	.03	.03	.05	.03	.14	.03	.05
<u>ADIS-P</u>									
School	.51	.68	.97	.98	.53	.03	.32	.02	.47
Performance	.39	.52	.97	.98	.43	.03	.48	.02	.57
Interpersonal	.36	.49	1.0	1.0	.42	.00	.51	.00	.58
Little Things	.22	.28	.97	.96	.33	.03	.72	.04	.67
Perfectionism	.25	.33	.97	.96	.35	.03	.67	.04	.65
Health (self)	.27	.37	1.0	1.0	.37	.00	.63	.00	.63
Health (others)	.33	.46	1.0	1.0	.41	.00	.54	.00	.59
Family	.28	.38	1.0	1.0	.38	.00	.62	.00	.62
World Things	.14	.20	1.0	1.0	.32	.00	.80	.00	.68
M	.31	.42	.99	.99	.39	.02	.59	.01	.61
SD	.11	.14	.02	.02	.06	.02	.14	.02	.06

Note: OAD/GAD= Overanxious disorder and Generalized anxiety disorder group. OAD= Overanxious disorder group. ADIS-P= Anxiety Disorders Interview Schedule-Parent Version. ADIS-C= Anxiety Disorders Interview Schedule for Children. BR= base rate (children with symptom divided by total number of children); SEN= sensitivity (children in diagnostic group who have symptom divided by total children in diagnostic group); SPE= specificity (children not in diagnostic group who do not have symptom divided by children not in diagnostic group); PPP= positive predictive power (children with symptom who are in diagnostic group divided by total children with symptom); NPP= negative predictive power (children without symptom who are not in diagnostic group divided by total children without symptom).

Table 5. Conditional Probabilities and Base Rates for DSM-IV GAD Somatic symptoms

GAD/ somatic symptom	BR	OAD/GAD (n=81)				OAD (n=30)			
		SEN	SPE	PPP	NPP	SEN	SPE	PPP	NPP
<u>ADIS-C</u>									
Can't sit still/relax	.55	.73	.93	.97	.56	.07	.27	.03	.44
Tires easily	.40	.51	.90	.93	.40	.10	.49	.07	.60
Can't concentrate	.49	.64	.93	.96	.49	.07	.36	.04	.51
Irritability	.48	.62	.90	.94	.47	.10	.38	.06	.53
Muscle aches	.34	.43	.90	.92	.38	.10	.56	.08	.62
Trouble sleeping	.48	.62	.90	.94	.47	.10	.38	.06	.53
M	.46	.59	.91	.94	.46	.09	.41	.06	.54
SD	.07	.11	.02	.02	.06	.02	.10	.02	.06
<u>ADIS-P</u>									
Can't sit still/relax	.51	.64	.87	.93	.47	.13	.36	.07	.53
Tires easily	.42	.53	.87	.91	.41	.13	.47	.09	.59
Can't concentrate	.54	.69	.87	.93	.51	.13	.31	.07	.49
Irritability	.56	.69	.80	.90	.49	.20	.31	.10	.51
Muscle aches	.37	.46	.87	.90	.37	.13	.54	.10	.63
Trouble sleeping	.50	.64	.90	.95	.48	.10	.36	.05	.52
M	.48	.60	.86	.92	.46	.14	.39	.08	.55
SD	.07	.09	.03	.02	.05	.03	.09	.02	.05

Note: OAD/GAD= Overanxious disorder and Generalized anxiety disorder group. OAD= Overanxious disorder group. ADIS-P= Anxiety Disorders Interview Schedule-Parent Version. ADIS-C= Anxiety Disorders Interview Schedule for Children. BR= base rate (children with symptom divided by total number of children); SEN= sensitivity (children in diagnostic group who have symptom divided by total children in diagnostic group); SPE= specificity (children not in diagnostic group who do not have symptom divided by children not in diagnostic group); PPP= positive predictive power (children with symptom who are in diagnostic group divided by total children with symptom); NPP= negative predictive power (children without symptom who are not in diagnostic group divided by total children without symptom).

Table 6. Conditional Probabilities and Base Rates for DSM-III-R OAD symptoms

Worry /Symptom	BR	OAD/GAD (n=81)				OAD (n=30)			
		SEN	SPE	PPP	NPP	SEN	SPE	PPP	NPP
<u>ADIS-C</u>									
Before things happen	.71	.74	.37	.76	.34	.63	.26	.24	.66
Little things	.45	.47	.60	.76	.30	.40	.53	.24	.70
Performance	.56	.56	.43	.73	.27	.57	.44	.27	.73
Head/stomachaches	.62	.65	.47	.77	.33	.53	.35	.23	.67
Impressions	.58	.58	.43	.73	.28	.57	.42	.27	.72
Need for reassurance	.59	.58	.40	.72	.26	.60	.42	.28	.74
Can't relax	.64	.69	.50	.79	.38	.50	.31	.21	.62
M	.59	.60	.46	.75	.31	.54	.39	.25	.69
SD	.08	.08	.08	.03	.04	.08	.09	.03	.04
<u>ADIS-P</u>									
Before things happen	.86	.90	.27	.77	.50	.73	.10	.23	.50
Little things	.33	.36	.73	.78	.30	.27	.64	.22	.70
Performance	.75	.74	.23	.72	.25	.77	.26	.28	.75
Head/stomachaches	.70	.74	.40	.77	.36	.60	.26	.23	.64
Impressions	.68	.65	.27	.71	.22	.73	.35	.29	.78
Need for reassurance	.80	.80	.20	.73	.27	.80	.20	.27	.73
Can't relax	.56	.57	.47	.74	.29	.53	.43	.26	.71
M	.67	.68	.37	.75	.31	.63	.32	.25	.69
SD	.18	.18	.19	.03	.09	.19	.18	.03	.09

Note: OAD/GAD= Overanxious disorder and Generalized anxiety disorder group. OAD= Overanxious disorder group. ADIS-P= Anxiety Disorders Interview Schedule-Parent Version. ADIS-C= Anxiety Disorders Interview Schedule for Children. BR= base rate (children with symptom divided by total number of children); SEN= sensitivity (children in diagnostic group who have symptom divided by total children in diagnostic group); SPE= specificity (children not in diagnostic group who do not have symptom divided by children not in diagnostic group); PPP= positive predictive power (children with symptom who are in diagnostic group divided by total children with symptom); NPP= negative predictive power (children without symptom who are not in diagnostic group divided by total children without symptom).

FOOTNOTES

1. According to both child and parent report, Kendall and Warman (1996) also found one child who met criteria for DSM-III-R OAD, but not DSM-IV GAD.