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*J Dev Behav Pediatr.* 2016 October ; 37(8): 610–618. doi:10.1097/DBP.0000000000000330.**Racial/Ethnic differences in the prevalence of anxiety using the Vanderbilt ADHD scale in a diverse community outpatient setting****Nerissa S. Bauer, MD, MPH<sup>1,2</sup>, Rachel Yoder, MD<sup>3</sup>, Aaron E. Carroll, MD, MS<sup>2,4</sup>, and Stephen M. Downs, MD, MS<sup>1,2</sup>**<sup>1</sup>Indiana University School of Medicine, Department of General & Community Pediatrics, Section of Children's Health Services Research, Indianapolis, IN<sup>2</sup>Regenstrief Institute for Healthcare, Indianapolis, Indiana<sup>3</sup>Georgetown University Medical Center, Department of Child & Adolescent Psychiatry, Washington D.C<sup>4</sup>Indiana University School of Medicine, Department of General & Community Pediatrics, Section of Pediatric and Adolescent Comparative Effectiveness Research**Abstract**

**Objective**—Pediatric anxiety is prevalent but frequently under-diagnosed compared to other behavioral conditions in primary care practice. Pediatricians routinely screen for attention deficit hyperactivity disorder using the Vanderbilt Rating Scale, which includes a short screen for anxiety. We sought to examine the prevalence of potential anxiety among patients whose parents originally had concerns of disruptive behavior in a diverse setting and examine differences in anxiety across ethnic groups using the Vanderbilt ADHD Diagnostic Rating Scale (VADRS).

**Methods**—This was a cross-sectional analysis of medical records data of children between the ages of 5–12 years whose parents had concerns of disruptive behavior and received primary care from May 25, 2010 to January 31, 2014 at 2 pediatric community health clinics in Indianapolis.

**Results**—16% of children whose parents had concerns for disruptive behavior screened positive for anxiety based on the VADRS screen. Hispanic parents were less likely to report symptoms of anxiety (Spanish-speaking: AOR 0.4, 95% CI 0.2 – 0.8; English-speaking: AOR 0.3, 95% CI 0.1 – 0.9) compared to white and black families.

**Conclusion**—Anxiety is detected at a lower rate among Hispanic pediatric patients using the VADRS. This may suggest differences in the performance of the VADRS among Spanish speaking families.

**Keywords**

ADHD; anxiety; medical home; screening

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## INTRODUCTION

Anxiety disorders are common among children and adolescents, with lifetime incidence rates of 22.7% in a large community sample of adolescents and young adults<sup>1</sup> and 6.1% in a primary care sample of 5–9 year olds.<sup>2</sup> They are frequently comorbid with, and often precede, other mental health disorders including ADHD, depression, behavioral disorders, and substance use disorders.<sup>1,3–7</sup> Anxiety disorders are also associated with lower social and academic function as youth and adults, lower health functioning, and higher medical service use.<sup>1,8</sup>

Despite their high prevalence and significant consequences, anxiety disorders have the lowest treatment rates among mental health disorders in youth, with just 32.2–41.4% of those diagnosed with anxiety disorders in large community samples having ever received treatment.<sup>9,10</sup> Treatment rates are even lower within ethnic minority groups<sup>10</sup> While the majority of pediatricians agree that their role as a primary care provider includes the identification and treatment or referral of anxiety disorders, pediatricians have historically had difficulty diagnosing anxiety disorders.<sup>11,12</sup> Multiple barriers have been cited in the assessment of mental health issues in primary care including low availability of child psychiatrists, lack of time during the primary care visit, lack of confidence and training, inadequate reimbursement, difficulty prioritizing among multiple problems, and lack of parental insight or willingness to discuss mental health problems.<sup>2,13–18</sup> An additional barrier in the assessment of mental health in primary care may be cultural differences in the understanding and communication of mental health problems in diverse primary care populations.<sup>19,20</sup>

Screening tools are an important and effective method for the diagnosis of mental health disorders within the often time-limited primary care setting.<sup>21–23</sup> Though screens have been developed for the assessment of anxiety disorders in children and adolescents in the primary care setting, incorporating and prioritizing these among the myriad of screens recommended during a primary care visit can also be challenging.<sup>13,24–26</sup>

Anxiety and ADHD are two commonly occurring behavioral conditions in pediatrics that can co-exist and mimic each other. In fact, disruptive behaviors identified in preschool-aged children have a high likelihood of a co-morbid emotional disorder that often remains stable up to 48 months later.<sup>27,28</sup> It is therefore imperative that pediatricians consider both conditions when children present with concerns of disruptive behaviors to make referrals for confirmation of diagnoses and initiation of appropriate treatment. The Vanderbilt ADHD Diagnostic Rating Scale (VADRS) screen has been recommended by the American Academy of Pediatrics (AAP) for the diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) and can be used to screen for co-morbid disorders frequently associated with ADHD. For screening of comorbid disorders, the VADRS includes a 7-question subscale for internalizing disorders, with 3 items targeting anxiety and 4 for depression. The VADRS has been analyzed previously for the screening of comorbid internalizing conditions, however it has not been analyzed within a large, diverse population to assess for potential cultural differences.<sup>29</sup>

The VADRS has been regularly used in conjunction with a computer decision support system in pediatric clinics serving a diverse patient population and led to improvement in ADHD diagnosis and management.<sup>30</sup> It has also served as the only routine formal screen for anxiety disorders, though used primarily for children who present with concerns for disruptive behavior.

As anxiety disorders are prevalent, but under-diagnosed and undertreated, within diverse primary care settings, we sought to examine the VADRS in its use for the identification of youth with potential anxiety that present with a concern for disruptive behavior disorders. The objective of the study was two-fold: 1) to examine the prevalence of potential anxiety among patients who present with parental concerns of disruptive behavior in a diverse primary care setting and 2) examine the variation in rates of possible anxiety detection by the VADRS based on ethnicity/language.

## METHODS

### Study Population & Design

This was a cross-sectional analysis of secondary data of children aged 5–12 years whose parents had concerns of disruptive behavior and were prompted to complete a VADRS during a primary care appointment between May 25, 2010 and January 31, 2014 at 2 pediatric community health clinics in the Eskenazi Health System in Indianapolis, Indiana. The two clinics serve families largely either on Medicaid or are uninsured. Data were derived from a computer decision support system (CDSS) linked to an electronic health record (EHR) system. This study was approved by the Indiana University Office of Research Administration.

### Data Sources

We used data from VADRS that were captured by our CDSS, the Child Health Improvement through Computer Automation (CHICA) system, which has been described elsewhere.<sup>31–35</sup> Briefly, CHICA provides clinical decision support for preventive care and chronic disease management during the medical encounter, based on information contained in the EHR and the child's age at the time of the clinic visit. CHICA is linked to our EHR, the Regenstrief Medical Record System (RMRS).<sup>36</sup> At each patient encounter, CHICA generates a tailored health survey consisting of twenty yes/no questions selected by the computer based on the patient's medical history in the EHR. Families complete the survey in the waiting room before the encounter. The survey can be completed in English or Spanish.<sup>37</sup> This surveillance and screening is based on Bright Futures<sup>38</sup> and published clinical care guidelines for developmental screening, ADHD, asthma, autism, and Type 2 diabetes.<sup>39–43</sup> Physicians receive guideline-based alerts and reminders triggered by responses to the survey and other data in the EHR.

In 2010, CHICA was programmed to automate surveillance, screening, and chronic care management of attention-deficit hyperactivity disorder (ADHD), including a version of the VADRS screening tool that could be scanned and automatically scored by the computer.<sup>30</sup> The VADRS was printed each time a parent endorsed one or more of 3 surveillance items for

disruptive behavior (often makes careless mistakes, often has difficulty remaining seated, or has a hard time paying attention) that would appear annually on the pre-screener form for children between the ages of 5 to 12 years of age.

## Measures

**NICHQ Vanderbilt ADHD Diagnostic Rating Scale (VADRS)**—This is a 47-item validated screening tool designed to measure symptoms of ADHD and categorizing positive responses into one of three clinically recognized subtypes (hyperactive-impulsive; inattentive, and combined type).<sup>44</sup> Additional items screen for co-morbid conditions (anxiety/depression, oppositional defiant disorder and conduct disorder). The 3 items meant to capture anxiety are: is fearful, anxious or worried; is self-conscious or easily embarrassed; is afraid to try new things for fear of making mistakes. The VADRS contains a separate section to assess the degree of functional impairment the child is experiencing. Parent or teacher informants rate each symptom on a 4-point scale ranging from 0=never to 3=very often. Scores of “2” or “3” are considered positive. Once the VADRS-parent form is completed, it is scanned into CHICA and automatically scored. The VADRS-teacher form is given to the parent at the clinic so that parents can deliver it to the teacher to complete. Teachers can fax the completed VADRS to a dedicated fax server that automatically reads a barcode, scores the VADRS, and stores the scores in CHICA. A report is printed with scoring interpretation for the pediatrician. For this study, data from the scoring report, specifically the composite scores of the subtype of ADHD and potential anxiety from both parent and teacher forms were used. We chose to compare identification of both ADHD and anxiety since both can co-exist and/or mimic each other. Cases were designated as “potential anxiety” based on suggested cut-offs for the internalizing subscale if at least any 3 of 7 symptoms were rated as a 2 or 3 and at least one performance item endorsed was a 4 or 5. Given the focus of the study on anxiety in primary care practice, data for other co-morbidities as measured by the VADRS was not included.

**Sample demographics and characteristics**—Child gender, age (5 years old vs. older), race/ethnicity (black, white, Hispanic or other), parental preferred language (English or Spanish, based on the language in which the family completed CHICA’s health survey) and insurance category (categorized as Medicaid, private or self-pay) were obtained from the CHICA database. Insurance category was used as a proxy for socioeconomic status.

## Statistical Analysis

Univariate and bivariate analyses of demographic/sample characteristics and each outcome of interest using the chi-square or Fisher’s exact test were performed. Because preferred language and race/ethnicity were highly correlated, and our previous work shows significant differences between Hispanic families that speak English versus Spanish,<sup>45</sup> we separated Hispanic families into two categories (Hispanic-English and Hispanic-Spanish). Parent VADRS results were obtained for 953 children, 201 (21%) of whom were Hispanic. Given a baseline rate of 18% of VADRS positive for anxiety among non-Hispanic children, we were powered to detect an absolute difference in rates of anxiety of 8% or more.

Logistic regression models were used to assess the association between each outcome of interest (by ADHD subtype based on the VADRS: inattentive, hyperactive/impulsive and combined and by anxiety also based on the VADRS) and child race-language, controlling for age and insurance status.

## RESULTS

A total of 1,284 subjects whose parents endorsed disruptive behavior concerns and completed a VADRS were included in the study sample, see Figure 1. Sample characteristics are reported in Table 1. The sample was 35% female. A large proportion of the sample was black (57%) or Hispanic/Latino (27%), followed by white (12%) and other (4%). Among Hispanic families, 67% completed the screen in Spanish. The majority of the sample had public insurance (92%), followed by private insurance (4%) or was self-pay (5%).

Among children whose families initially expressed concerns about disruptive behaviors and had a scanned parent VADRS form (953/1284), 16% (149/953) screened positive for concern for a possible anxiety disorder based on the scoring of VADRS co-morbidity subscale. Parents of Hispanic children (41%) were less likely to complete and return the VADRS compared to parents of white (19%) and black (21%) children. Compared to all other races/ethnicities, Hispanic parents were less likely to endorse symptoms of anxiety. This was true regardless of whether the VADRS was completed in English or Spanish (Hispanic-Spanish: AOR 0.4 ; CI 0.2 – 0.8 vs. Hispanic-English: AOR 0.3; 95% CI 0.1 – 0.9), compared to black and white families. There were no significant differences in anxiety identified among parents based on gender, insurance status, and age. See Table 2.

The sample of children who had a completed teacher VADRS forms was smaller ( $n = 757$ ). Teachers were less likely to return the VADRS for white (52%) or black (44%) children compared to Hispanic children (16%). Based on teacher report, 11% of children (82/757) had potential anxiety based on the VADRS. There were no significant differences in the rates of anxiety symptoms based on race/ethnicity, gender, and insurance status on the teacher VADRS. Teachers were less likely to report potential anxiety in children 5 years or younger compared to older children (AOR 0.3 95% CI 0.1 – 0.7).

In parental assessment of ADHD symptoms, parents of white children were more likely to endorse symptoms of inattention (AOR 1.8; 95% CI 1.2 – 2.7) compared to parents of black and Hispanic children. See Table 2. Spanish speaking parents of Hispanic children were less likely to endorse symptoms that met criteria for all three subtypes of ADHD. Parents of 5-year-old children were more likely to endorse symptoms of hyperactivity/impulsivity compared to parents of children older than 5 years (AOR 2.0; 95% CI 1.4 – 2.8). Those with private insurance were less likely to endorse symptoms that met criteria for inattentive subtype compared to those with Medicaid (AOR 0.4; 95% CI 0.2 – 0.9). There were no significant differences in parental report of ADHD symptoms based on gender.

Teachers were significantly less likely to report all subtypes of ADHD for Hispanic children whose parents completed the screen in Spanish compared to parents of white and black children. See Table 2. Teachers were less likely to report ADHD – Hyperactive (AOR 0.3

95% CI 0.2 – 0.6) and ADHD – Combined type (AOR 0.3 95% CI 0.2 – 0.7) for Hispanic children whose parents completed the screen in English compared to those completed for white or black children. Teachers were less likely to report symptoms of ADHD among female students compared to males. Teachers were more likely to report symptoms that met criteria for ADHD-Hyperactive/Impulsive type (AOR 2.8 95% CI 1.8 – 4.3) and ADHD – Combined type (AOR 2.5 95% CI 1.6 – 4.0) for 5-year-old children compared those older than 5 years.

A sub-analysis of anxiety and ADHD criteria scores was conducted for the Hispanic families. There was no significant difference in the reporting of anxiety or ADHD symptoms among parents based on language. There was also no significant difference for anxiety based on available teacher reports. However, Hispanic parents reported significantly more anxiety symptoms in females (AOR 4.0; 95% CI 1.1 – 15.3) compared to males; whereas, teachers were no more likely to report anxiety symptoms for either gender. Teachers reported significantly higher inattention symptoms in Hispanic children whose parents completed the form in English (AOR 1.8 95% CI 1.0 – 3.3). Teachers were significantly less likely to endorse symptoms of all types of ADHD in Hispanic females compared to Hispanic males. Among 5-year-old children, teachers were significantly more likely to endorse symptoms of Hyperactive-Impulsive type (AOR 3.4 95% CI 1.5 – 7.3) and Combined type (AOR 4.3 95% CI 1.8–10.5) compared to older Hispanic children. See Table 3.

## DISCUSSION

In this study of 1,284 children whose parents and teachers completed the VADRS as a result of positive responses to initial questions about disruptive behavior, 16% screened positive for potential anxiety based on parent report using the VADRS. A previous study within a primary care setting reported 50% of youth ages 8–17 with ADHD had a comorbid anxiety disorder.<sup>46</sup> A national community sample of youth ages 6–17 showed 17.8% of those with ADHD had a comorbid anxiety disorder.<sup>47</sup> Our sample was different in that these were children whose parents reported some disruptive behaviors, but who did not necessarily meet diagnostic criteria for ADHD.

Even though the prevalence of ADHD has been increasing among all children in the US, Hispanic families were among the groups with the largest increases between 2003 and 2007.<sup>48</sup> Given that ADHD and anxiety can present with disruptive behaviors, our findings add to the growing literature on this topic. Cultural factors do play a role in whether and what parents report to the pediatrician, which may lead to specific types of behaviors to be mentioned by Latino parents more than others.<sup>49</sup> Hyperactivity, aggression and school complaints are the most common types of disruptive behaviors that lead Hispanic parents to seek help; whereas they inattentive behaviors are usually underreported in children who eventually were diagnosed with ADHD.<sup>49</sup> In our sample, Hispanic parents, regardless of language, were less likely to report symptoms that met criteria for potential anxiety. However, when stratified by parental preferred language, Hispanic girls were much more likely to have a positive subscale screen for potential anxiety. These results contrast a growing body of literature which Hispanic youth are reported to have higher in symptoms of anxiety.<sup>20,50–54</sup> However, our findings is supported by work done by others<sup>55,56</sup> who suggest

that, among Latino families, examination of functional impairment from disruptive behaviors, rather than symptomatology alone, is an important part of a larger cultural appropriate assessment.<sup>57</sup> Moreover, when Hispanic youth screen positive for anxiety, it is usually a result of more somatic symptoms<sup>51,58–60</sup> and higher anxiety symptom sensitivity.<sup>61,62</sup> Authors have hypothesized that this may be due to greater cultural acknowledgement of somatic symptoms as opposed to mental health problems.<sup>20</sup> For example, in a study of Mexican-American and Mexican parents compared to European American parents, Mexican and Mexican-American parents had greater somatic interpretations of ambiguous situations presented.<sup>59</sup> Moreover, parents of Spanish preschool-aged children reporting medically unexplained somatic symptoms had a higher level of emotional and behavioral symptoms indicative of generalized anxiety, ADHD, feeding and adjustment disorders.<sup>63</sup> It is important to note that the VADRS anxiety subscale does not include questions about somatic symptoms of anxiety or anxiety sensitivity. This may indicate that, for Hispanic children and adolescents (especially males) with concern for disruptive behaviors, the VADRS alone is an inadequate screen for anxiety and additional evaluations that include assessment of somatic symptoms of anxiety, is warranted. Pediatricians may also wish to inquire about parental perceptions of behavior more generally when seeing Hispanic families to understand how the parent is coping.

The greater acceptance of somatic symptoms within the Hispanic population may be related to a belief that mental health symptoms are not curable. In a study more consistent with our results, 62 Hispanic mothers of children with disruptive behaviors were interviewed.<sup>64</sup> Thirty children had symptoms of anxiety as determined by a mental health counselor, but parents reported anxiety symptoms in only 12. A panel of “cultural informants” in the study indicated that Hispanic parents might be reticent to label children as having anxiety because they feel that children who do not have significant life stressors should not feel anxious. Rather, if they do, it may signal a serious, lifelong problem.<sup>64</sup> In another study of Hispanic young adults and their parents, the belief that mental illnesses were untreatable was associated with less willingness to seek help for mental illness.<sup>65</sup> Further studies have shown evidence of greater stigma associated with anxiety as a mental illness in Latino populations.<sup>20,59</sup> Many studies have shown that parents, regardless of ethnicity, tend to underreport anxiety symptoms when parent reports are compared to child self-reports.<sup>24,66</sup> Taken together, it may be that the VADRS co-morbidity subscale has inadequate sensitivity for detection of anxiety symptoms among Hispanic families. This may also indicate that in Hispanic children with disruptive behaviors, a thorough anxiety screen is also warranted. Providers may also wish to emphasize the potential of an improved prognosis with interventions when discussing potential anxiety.

This study must be viewed in light of its limitations. First, we did not compare the results of the VADRS to an anxiety-specific screener or gold standard, therefore we are unable to state whether those who screened positive for anxiety actually met diagnostic criteria or the number of false positive results. Moreover, the VADRS comorbidity subscale relies upon 3 items to detect potential anxiety. It is possible that those items are not representative of dimensions Hispanic families typically endorse for anxiety, such as somatic complaints. A previous study has shown that only 46% of children recruited from the community with anxiety were assessed as having anxiety by the VADRS.<sup>29</sup> Second, even though the patients

in our sample were from a diverse general clinic population, they represented a subpopulation of children whose parents indicated concerns for disruptive behavior on the pre-screener form. Therefore, given how we sampled our study population, our findings may be of restricted generality. While disruptive behaviors can represent symptoms of anxiety in children, this method likely missed a large number of patients with anxiety, an internalizing disorder, whose parents may have provided different responses to the VADRS anxiety subscale questions. Discordance between parent and child report of internalizing symptoms is typical.<sup>24,60</sup> We acknowledge further that we focused on “potential anxiety” rather than internalizing disorders in general, which would include depression. However, a study examining the clinical utility of the VADRS comorbidity screening subscales by Becker et al<sup>29</sup> using the same cut off values that was used in the current study found only one child met Diagnostic Interview Schedule for Children Version IV (DISC-IV)<sup>67</sup> criteria for depression without simultaneously meeting criteria for an anxiety disorder. Furthermore, in an assessment of our population, we used the language in which the VADRS screen was completed as a rough indicator of acculturation. This has been a method used to indicate acculturation in other studies,<sup>19,52</sup> but is limited as it is only one facet of acculturation, which involves multiple factors such as social involvement, length of time in the United States, personal identity, and perceived stigmas.<sup>68</sup> We also do not know the country of origin of the Hispanic parents who completed the screens, although a majority of families served by these clinics are known to be of Mexican descent. While Spanish-speaking countries do have some cultural similarities, these can also vary, making it difficult to fully generalize to Spanish-speaking families.<sup>69</sup> To truly assess the impact of our results, the cross-cultural validity of the anxiety three-item measure must be addressed, which is outside the scope of this current study.<sup>70</sup>

## CONCLUSION

The VADRS is commonly used in primary care pediatric clinics and includes a brief screen for comorbid anxiety. While limiting the number of screening tools used is a valid goal given clear challenges in the outpatient pediatric setting, this may result in missed diagnoses among specific subpopulations. Practices wishing to utilize the VADRS as a first-line screener for anxiety might want to conduct a more thorough assessment about somatic complaints, especially among Hispanic families, and boys in particular. More research is needed in the development and implementation of accurate yet brief screening tools to evaluate anxiety in diverse primary care settings.

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## Biographies

**Nerissa S. Bauer, MD, MPH** is the first author and responsible for the conception and design, analysis and interpretation of the data. Dr. Bauer drafted the article and revised it critically with the input of co-authors and other individuals who agreed to read early versions of the manuscript. Dr. Bauer gives final approval of the version of the paper as it is submitted.

**Rachel Yoder, MD** is a co-author and helped draft the initial manuscript. She performed the literature review and provided input into the interpretation of the data. She helped with revision of the manuscript prior to submission.

**Aaron E. Carroll, MD, MS** is a co-author who helped with providing input into the study design and critical revision of the manuscript prior to submission.

**Stephen M. Downs, MD, MS** is a co-author and has provided weekly mentoring and support to Dr. Bauer throughout the course of the study. He provided input into the study design/protocol, statistical analysis and interpretation of results. He also provided the funding to conduct the study. He helped with the revision of the manuscript prior to submission.

## Abbreviations

<b>CHICA</b>	Child Health Improvement through Computer Automation
<b>AOR</b>	Adjusted Odds Ratio
<b>CI</b>	Confidence Interval
<b>ADHD</b>	Attention deficit-hyperactivity disorder
<b>VADRS</b>	Vanderbilt ADHD Diagnostic Rating Scale
<b>EHR</b>	electronic health record

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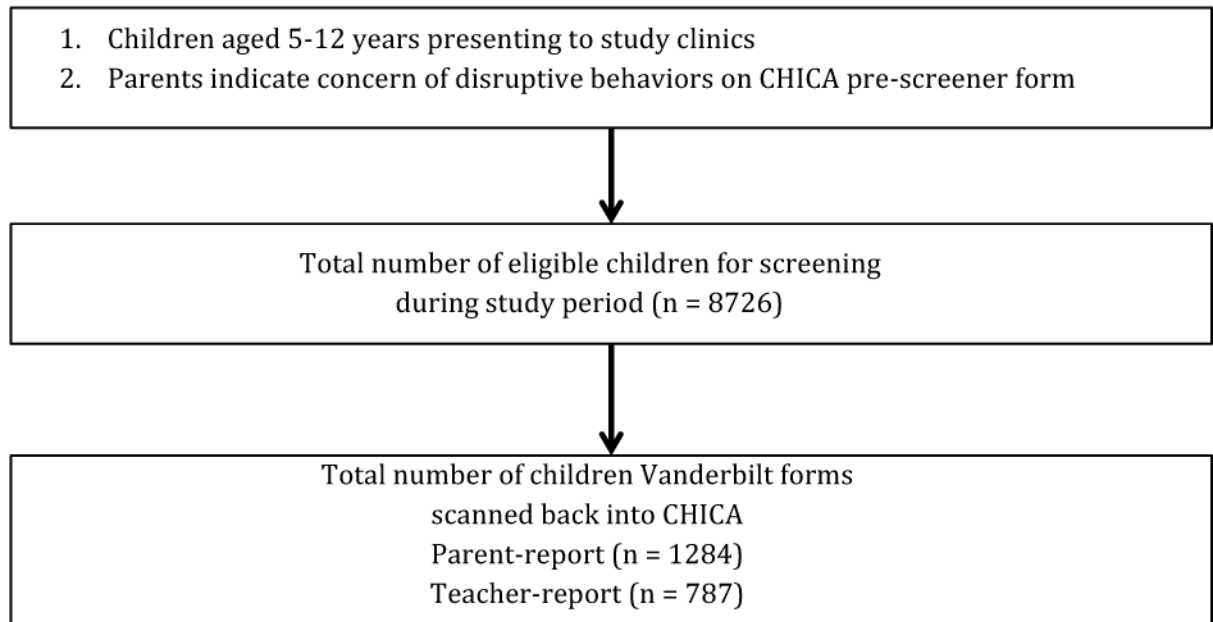
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## Study Population



**Figure 1.**  
Flowchart of study sample population

**Table 1**

Sample Characteristics (n=1284)\*

Characteristic	N	%
Child female gender	452	35
Child age		
5 years old	222	17
6–12 years	1062	83
Child Race/Ethnicity		
Black	728	57
White	159	12
Hispanic	342	27
Other/Unknown	48	4
Child Race/Ethnicity + Language		
Black	728	58
White	159	13
Hisp-Spanish	209	17
Hisp-English	104	8
Other/Unknown	48	4
Parental Language preference		
English	988	81
Spanish	230	19
Insurance Type		
Medicaid	1089	92
Private	42	4
Self-Pay	58	5

\* May not equal 100% due to missing values

**Table 2**

Logistic regression showing adjusted odds ratios (AOR) of meeting criteria for ADHD subtypes and anxiety based on race/ethnicity, sex, insurance, and age. Significant associations are bolded.

<b>Parental Vanderbilt</b>									
	Hyperactive-Impulsive		Inattentive		Combined		Anxiety		
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	
Race/Ethnicity									
Black	—	—	—	—	—	—	—	—	—
White	1.1	0.7–1.7	<b>1.8</b>	<b>1.2–2.7</b>	1.4	0.9–2.2	1.4	0.9–2.3	—
Hisp-Sp	<b>0.4</b>	<b>0.2–0.6</b>	<b>0.5</b>	<b>0.3–0.8</b>	<b>0.3</b>	<b>0.2–0.6</b>	<b>0.4</b>	<b>0.2–0.8</b>	<b>0.2–0.8</b>
Hisp-Eng	0.6	0.4–1.0	0.6	0.3–1.0	0.7	0.4–1.2	<b>0.3</b>	<b>0.1–0.9</b>	<b>0.1–0.9</b>
Other	0.8	0.4–1.7	1.3	0.6–2.8	1.0	0.4–2.2	0.4	0.1–1.6	0.1–1.6
Female	1.0	0.8–1.4	1.3	0.6–2.8	1.0	0.7–1.3	1.1	0.7–1.6	—
Insurance									
Medicaid	—	—	—	—	—	—	—	—	—
Private	0.7	0.3–1.4	<b>0.4</b>	<b>0.2–0.9</b>	0.4	0.2–1.0	0.5	0.2–1.7	—
Self-pay	0.8	0.3–2.0	0.5	0.2–1.2	0.5	0.2–1.4	—	—	—
Child Age									
6–12 yr	—	—	—	—	—	—	—	—	—
5 yr	<b>2.0</b>	<b>1.4–2.8</b>	0.9	0.6–1.3	1.3	0.9–1.9	0.7	0.4–1.2	—
<b>Teacher Vanderbilt</b>									
	Hyperactive-Impulsive		Inattentive		Combined		Anxiety		
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	
Race/Ethnicity									
Black	—	—	—	—	—	—	—	—	—
White	0.6	0.3–1.0	0.7	0.4–1.2	0.5	0.3–1.0	0.9	0.4–1.9	—
Hisp-Sp	<b>0.2</b>	<b>0.1–0.4</b>	<b>0.4</b>	<b>0.3–0.7</b>	<b>0.3</b>	<b>0.2–0.4</b>	0.6	0.3–1.1	0.3–1.1



Parental Vanderbilt											
Hyperactive-Impulsive			Inattentive			Combined			Anxiety		
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	
Hispanic-Eng	<b>0.3</b>	<b>0.2-0.6</b>	0.8	0.5-1.4	<b>0.3</b>	<b>0.2-0.7</b>	0.4	0.1-1.2			
Other	<b>0.4</b>	<b>0.1-0.9</b>	0.6	0.3-1.3	0.5	0.2-1.2	1.0	0.3-2.9			
Female	<b>0.3</b>	<b>0.2-0.5</b>	<b>0.5</b>	<b>0.3-0.7</b>	<b>0.3</b>	<b>0.3-0.4</b>	1.1	0.6-1.8			
Insurance											
Medicaid	—	—	—	—	—	—	—	—	—	—	—
Private	1.7	0.7-4.2	<b>2.9</b>	<b>1.1-7.4</b>	2.2	0.9-5.4	1.6	0.5-4.7			
Self-pay	1.3	0.6-2.8	0.9	0.5-1.9	1.5	0.6-3.5	0.5	0.1-1.9			
Child Age											
6-12 yr	—	—	—	—	—	—	—	—	—	—	—
5 yr	<b>2.8</b>	<b>1.8-4.3</b>	1.1	0.7-1.7	<b>2.5</b>	<b>1.6-4.0</b>	<b>0.3</b>	<b>0.1-0.7</b>			

\* Multivariable logistic regression with robust estimates, adjusting for race/ethnicity, child gender, insurance type and child age.

**Table 3**

Sub-analysis of Hispanic families showing the adjusted odds ratios of meeting criteria of for ADHD subtypes and anxiety on the VADRS by language, sex, insurance, and age. Statistically significant associations are bolded.

<b>Parental Vanderbilt</b>						
	Hyperactive-Impulsive		Inattentive		Anxiety	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Language	—	—	—	—	—	—
Spanish	—	0.8–3.5	—	—	—	—
English	1.7	0.8–3.5	1.1	0.5–2.2	0.6	0.2–2.5
Female	1.6	0.8–3.2	1.2	0.6–2.4	<b>4.0</b>	<b>1.1–15.3</b>
Insurance	—	—	—	—	—	—
Medicaid	—	—	—	—	—	—
Private	0.4	0.0–3.6	—	—	—	—
Self-pay	2.1	0.7–5.8	0.8	0.3–2.4	1.0	0.3–3.8
Child Age	2.0	0.9–4.8	0.8	0.3–2.0	1.1	0.4–3.2
Child Age	2.0	0.9–4.8	0.8	0.3–2.0	1.0	0.2–5.3
<b>Teacher Vanderbilt</b>						
	Hyperactive-Impulsive		Inattentive		Anxiety	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Language	—	—	—	—	—	—
Spanish	—	—	—	—	—	—
English	1.3	0.6–2.7	<b>1.8</b>	<b>1.0–3.3</b>	0.7	0.2–2.2
Female	<b>0.3</b>	<b>0.1–0.7</b>	<b>0.4</b>	<b>0.2–0.7</b>	<b>0.1</b>	<b>0.0–0.5</b>
Insurance	—	—	—	—	—	—
Medicaid	—	—	—	—	—	—
Private	3.6	0.6–20.5	3.1	0.6–16.9	6.1	0.9–42.0
Self-pay	1.7	0.6–4.5	1.0	0.4–2.2	<b>3.1</b>	<b>1.1–8.9</b>
Child Age	<b>3.4</b>	<b>1.5–7.3</b>	0.9	0.5–1.9	<b>4.3</b>	<b>1.8–10.5</b>
Child Age	<b>3.4</b>	<b>1.5–7.3</b>	0.9	0.5–1.9	<b>4.3</b>	<b>1.8–10.5</b>

\* Multivariable logistic regression with robust estimates, adjusting for language, insurance type, child gender, and child age.

VADRS: Vanderbilt ADHD Diagnostic Rating Scale

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