


Distinguishing Features of Cuban Children Referred for Professional Help Because of ADHD: Looking Beyond the Symptoms

Journal of Attention Disorders
15(4) 328–337
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DOI: 10.1177/1087054709356161
http://jad.sagepub.com


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Abstract

Objective: To distinguish Cuban children clinically referred because of ADHD from an at-risk community sample and a community control group in terms of symptoms, associated difficulties and impairment of family and peer relations. **Method:** Parents and teachers of 1,036 children (6–8 years old) completed an established ADHD rating scale and a behavioral screening measure, including peer functioning. We also administered a structured clinical interview and measures of family impairment to the clinical sample and to an at-risk community-based subsample. **Results:** Although both clinical and at-risk groups displayed more externalizing and internalizing symptoms than controls, referred children were not only characterized by higher levels of ADHD symptoms, but also by greater impairment of family and peer relations than at-risk community children or community controls. **Conclusion:** The findings suggest that ADHD has major consequences on the family and peer functioning of Cuban children, which may lead to their referral for treatment. (*J. of Att. Dis.* 2011; 15(4) 328–337)

Keywords

ADHD, prevalence, family and social impairment, Latin America, culture

ADHD is known to have adverse effects on both family life and relations with peers. Children with ADHD have been found to disobey their parents or to comply for only relatively short periods of time (Tallmadge & Barkley, 1983). Their parents become authoritarian, using fewer positive methods or positive comments in their child-rearing (Johnston, 1996). They find parenting stressful but receive little social support (Barkley, Fischer, Edelbrock, & Smallish, 1991). Many researchers consider problems in relating to peers as a central issue for children with ADHD (e.g., Mrug et al., 2009). Children with ADHD tend to be rejected by their peers and have fewer friends than other children (Hoza et al., 2005). Their impulsivity, hyperactivity, inattention, reckless and off-task behavior, poor emotion regulation and frequent display of negative affect have been linked with active dislike by their classmates (Mrug, Hoza, Pelham, Gnagy, & Greiner, 2007).

Hyperactivity is the problem that brings at-risk children to clinical settings because it leads to disruptive or dangerous behaviors (Buitelaar et al., 2006). However, a recent review conversely indicates that it is specific functional impairment, not the core ADHD symptoms, that often

predicts both referral of children with ADHD and long-term outcome (Pelham, Fabiano, & Massetti, 2005). Clinical cases may therefore be characterized by more chronic and severe impairment of functioning and may constitute a higher burden to caregivers and peers than children not receiving services (Bauermeister et al., 2007).

The determinants of clinical referral may vary by country and culture because of differences in service-delivery systems. The extent of cross-national and cross-cultural variation in ADHD is not clear. Recent systematic reviews (e.g., Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007) confirm wide variations in the prevalence of ADHD

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among children and adolescents in different countries, which range from 0.9% to 20%. However, a large scale multisite cross-cultural study by Buitelaar and colleagues (Buitelaar et al., 2006) showed that, when a uniform set of rigorous, standardized diagnostic criteria was used by skilled clinicians across clinics in Africa, Australia, Europe, and North America, the prevalence of ADHD and comorbid conditions, as well as functional impairment was very similar; oppositional defiant disorder was the most common comorbid condition (Buitelaar et al., 2006).

Cultural stigma is nonetheless an important barrier to the recognition and treatment of ADHD. There are variations in number of children brought to the attention of professionals for help with problems of ADHD in different countries, with economic factors playing an important role. Children are also less likely to receive medical attention or pharmacotherapy outside the United States and Canada. For instance, North American mental-health professionals are known to prescribe medication for at least five times as many children per capita than even the UK and Western Europe (e.g., Brewis, Schmidt, & Meyer, 2002), which are not very dissimilar to North America in terms of the major dimensions of cultural variation.

It cannot be assumed that ADHD has the same consequences on family and peer interaction in different cultures. To the best of our knowledge, no study has been conducted on ADHD in Cuba except one study published on minimal brain dysfunction at the end of the 1980s (Ramirez, Vitella, & Hernandez, 1989). Cuba is an ideal setting for this research because of the very advanced level of both health services and of the educational system. Cuban pupils perform highest in academic achievement of any country in Latin America. The average class size is 17, the lowest in Latin America, and literacy has reached 97% compared to 60% before the Revolution (Carnoy, Gove, & Marshall, 2007). Given their small teaching loads, teachers become very familiar with the family lives of their pupils and visit pupils' homes regularly. Medical care is readily available, with one family doctor per 1,600 persons, compared with well more than 3,000 in the United States. (Hood, 2000). Life expectancy is now 76.3 years, compared with 77.2 years in the United States. The advanced level of Cuban medical knowledge facilitates appreciation of the consequences of ADHD and of the potential for its treatment. Nevertheless, medication of all kinds is very limited in Cuba, with medication for ADHD currently prescribed only by specially trained and licensed psychiatrists to the most extreme cases. These factors make for a unique research opportunity.

Referral for treatment may reflect the impact of ADHD on the family, in Cuba as elsewhere. Despite the emphasis on the peer group as a socializing agent since the Cuban Revolution, extended-family loyalty remains strong in Cuba as in other Latin-American societies. Although parents are

likely to have the social support of their own parents and other relatives, the extended family may impose standards for child behavior that are not the same as would evolve in a nuclear-family home more distant emotionally from other relatives. Individual expressions of externalizing behaviors may be seen as inconsistent with group discipline and harmony. Discipline and self-control are frequent themes in Cuban writings about the foundations of the educational system (e.g., Barrueta, 2001). In both school and in the Pioneer group, children and adult leaders evaluate the social behavior of other group members. The Pioneers are an afterschool group with many activities similar to those of the Scouts in Western countries but also many civic responsibilities including care for other pupils having difficulty; all Cuban schoolchildren participate. This institution is seen as fundamental in shaping the character of future guardians of the Revolution. The first aim of this study was to describe a community sample of Cuban children exhibiting symptoms of ADHD in terms of specific symptoms and correlates. The major objective of this study was to identify the distinguishing characteristics of Cuban children referred for professional attention because of ADHD. We hypothesized that the referred children would display more impaired functioning in both the family and peer domains than non-referred children. However, we did not exclude the possibility that the clinical group would display more severe externalized disorder symptoms than community participants displaying symptoms of ADHD above traditional cutoffs for identification.

Method

Participants and Procedure

This study was approved by the University of Ottawa Research and Ethics Board. Only verbal consent informed by the information contained in a study brochure was needed because that is the only practice consistent with the Cuban cultural context. We conducted the study in the city of Santiago de Cuba, the second largest city in the country with over a million inhabitants. Santiago is located in the Eastern Cuba, in Oriente province, the capital of Afro-Cuban culture.

Clinical sample. The clinical sample consisted of 36 children (29 boys) referred for psychiatric care because of attention and/or hyperactivity problems to the Hospital Infantil del Sur, the major children's hospital in Santiago de Cuba and at medical clinics from the community in Santiago de Cuba. They were all referred. Among the caretakers in the clinical group, 50.0% had a university degree, 2.8% had some university education, 25.0% had an advanced technical diploma, 16.7% had completed high school, and 5.6% had some secondary education. The parents and teachers

completed an established ADHD rating scale, a behavioral screening measure (including peer functioning) and measures of family impairment. Trained undergraduates also administered a structured clinical interview to parents assessing externalizing disorder symptoms, including those of ADHD. Parents completed all measures at the hospital and in medical clinics from the community in Santiago de Cuba whereas teachers completed all measures at school.

Community sample. The community participants were 1,000 children (503 boys), 6-8 years old, their parents and teachers. We randomly selected 18 elementary schools in Santiago de Cuba. Parents and teachers completed all measures at home or at school after school hours. Community participants were recruited between January and June of the same school year, allowing teachers to know their students at least from the past 5 months. Among the caretakers in the community group, 52.8% had a University degree, 2.8% had some University education, 30.6% had an advanced technical diploma, 11.1% had completed high school, and 2.8% had some secondary education. Among the 1,000 community children, we selected children having *T* scores below 60 on the ADHD Index of both the parent and teacher versions of an established ADHD rating scale. Subsequently, we randomly matched 36 control children ("community controls") to the clinical sample in terms of age, sex, and caretaker's education.

We also screened for ADHD and associated difficulties in the community. These children obtained *T* scores of or above 65 (1.5SD above the mean) either on the ADHD Index of the parent or teacher version of the same ADHD rating scale. Among the 139 children identified, we randomly selected 36 at-risk children matched to the clinical sample and community control sample in terms of age ($\chi^2 = .00, p = 1.00$), sex ($\chi^2 = .00, p = 1.00$) and caretaker's education ($\chi^2 = 3.08, p = .93$). Finally, in order to examine differences between the at-risk children and clinic-referred children, we administered the same structured clinical interview and measures of family and peer impairment as used with the clinical sample to 36 at-risk community children.

Measures

Conners Parent and Teacher Rating Scales-Revised Short Forms. We used a modified version of the Conners Parent Rating Scale-Revised Short Form (CPRS-R S; Conners, Sitarenios, & Parker, 1998a; Spanish version). The adapted CPRS consisted of 21 items covering three underlying factors derived from the CPRS-R: Long Form (Conners et al., 1998a): the Oppositional (4 items, e.g., "Angry and resentful"; Cronbach's $\alpha = .75$; all alphas are based on the Cuban data), Cognitive Problems/Inattention (3 items, e.g., "Needs close supervision to get through assignments"; Cronbach's $\alpha = .78$), and Hyperactivity (3 items, e.g., "Runs about or

climbs excessively in situations where it is inappropriate"; Cronbach's $\alpha = .73$) subscales. We also included the original 12 items of the CPRS ADHD Index. Correlations among subscales of the CPRS-R-S ranged from .36 to .74 in the community sample ($N = 1,000$), all $p < .01$.

Teachers completed the CTRS-R S (Conners, Sitarenios, & Parker, 1998b; Spanish version), a modified 27-item scale, also consisting of three selected subscales derived from the CTRS-R: Long Form (Conners et al., 1998b): the Oppositional (5 items, e.g., "Defiant"; Cronbach's $\alpha = .84$), Inattention (4 items, e.g., "Forget things he/she has learned"; Cronbach's $\alpha = .86$), and Hyperactivity (7 items, e.g., "Is always "on the go" or acts as if driven by a motor"; Cronbach's $\alpha = .87$) subscales. We also included the original 12 items of the CTRS ADHD Index. Correlations among subscales of the CTRS-R-S ranged from .41 to .85 in the community sample ($N = 1,000$), all $p < .01$.

On both scales, each item is rated from 0 for *not true at all* (never, seldom) to 3 for *very much true* (very often, very frequent). Confirmatory factor analysis revealed that the factor structure of the Conners' Rating Scales-Revised Short Forms was very similar to that of the original U.S. version (parent version: GFI = .98; CFI = .98; RMSEA = .05; teacher version: GFI = .96; CFI = .97; RMSEA = .05). Correlations between CPRS-R S and the CTRS-R S corresponding subscales ranged from .15 (Hyperactivity) to .27 (ADHD Index), all $p < .01$.

In order to establish the validity of the Conners rating scales in Cuba, we performed forced-entry discriminant analyses to determine whether the Conners subscales differentiated the clinical sample from a randomly selected community subsample matched for age and sex ($N = 36$). In the CPRS-R-S analysis, the ADHD Index (Wilks' Lambda = .41; $F(1, 70) = 103.00, p < .001$), the Hyperactivity subscale (Wilks' Lambda = .41; $F(1, 70) = 102.99, p < .001$), the Oppositional subscale (Wilks' Lambda = .50; $F(1, 70) = 69.64, p < .001$), and the Cognitive Problems/Inattention subscale (Wilks' Lambda = .65; $F(1, 70) = 37.37, p < .001$) successfully discriminated the groups. The CPRS-R-S discriminant function correctly classified 90.3% of the cases. For the CTRS-R-S, the ADHD Index (Wilks' Lambda = .50; $F(1, 70) = 70.32, p < .001$), the Hyperactivity subscale (Wilks' Lambda = .62; $F(1, 70) = 43.45, p < .001$), the Oppositional subscale (Wilks' Lambda = .73; $F(1, 70) = 26.44, p < .001$), and the Cognitive Problems/Inattention subscale (Wilks' Lambda = .83; $F(1, 70) = 14.57, p < .001$) successfully discriminated the subtypes. The CTRS-R-S discriminant function correctly classified 84.7% of the cases. Combining the CPRS-R-S and CTRS-R-S subscales together correctly classified 93.1% of the cases ($\chi^2 = 71.85, p < .001$).

Strengths and Difficulties Questionnaire. We used an adapted version of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Spanish versions for parents

and teachers) to establish the co-occurrence of various externalizing and internalizing symptoms associated with ADHD as well as social functioning. The modified SDQ included the same 17 items, divided into five subscales, with items assessing hyperactivity (2 items, e.g., “Restless, overactive, cannot stay still for long” and “Constantly fidgeting or squirming”; parent version, Cronbach’s $\alpha = .77$; teacher version, Cronbach’s $\alpha = .79$), conduct problems (3 items, e.g., “Often fights with other children or bullies them”; parent version, Cronbach’s $\alpha = .57$; teacher version, Cronbach’s $\alpha = .61$), emotional symptoms (5 items, e.g., “Many worries and often seems worried”, parent version, Cronbach’s $\alpha = .60$; teacher version, Cronbach’s $\alpha = .65$), peer relationship problems (2 items, “Has a least one good friend”; parent version, Cronbach’s $\alpha = .40$; teacher version, Cronbach’s $\alpha = .64$), and prosocial behavior (5 items, e.g., “Often offers to help others (parents, teachers, other children)”; parent version, Cronbach’s $\alpha = .65$; teacher version, Cronbach’s $\alpha = .76$). The response format is *not true*, *somewhat true*, or *certainly true*. Confirmatory factor analysis indicated good fit with the original factor structure: (parent scale: GFI = .97; CFI = .94; RMSEA = .04; teacher scale: GFI = .96; CFI = .94; RMSEA = .05). Correlations between SDQ-Parent version and the SDQ-Teacher version corresponding subscales ranged from .16 (Prosocial subscale) to .30 (Hyperactivity subscale), all $p < .01$.

National institutes of mental health diagnostic interview schedule for children, parent version IV (NIMH DISC-IV). We employed the latest Spanish translation of the paper-version NIMH DISC-IV (Bravo et al., 2001) to assess *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) (DSM-IV) symptoms of externalizing disorder (ADHD, Oppositional defiant disorder (ODD), and Conduct disorder (CD)) during the last year. The DISC-IV is a structured instrument designed to be administered by lay interviewers. Bravo et al. (2001) report that the test–retest reliability (kappa statistic) of parent reports of ADHD over 1 to 2 weeks including the impairment criterion was 0.49, which represents fair agreement. Resources permitted administration of this instrument only to parents of the clinical group and those of at-risk children from the community group and only the sections pertaining to externalizing disorder symptoms, not categorical diagnoses. In addition to the limited time available for interviews by Cuban professionals and advanced students, paper and computers are very limited in Cuba.

Family Care Burden Scale. We modified the Family Care Burden Scale (FCBS; Bauermeister et al., 2007) to measure the impact of child’s emotions, behavior, or learning capacity have on the caretaker’s feelings of personal well-being, family relationships, activities, and responsibilities during the past year. Participants were presented a 7-item scale and asked to respond each statement by circling one of three options from “Never or Almost Never” to “Often.” Factor

analysis indicated the presence of one underlying factor that explained 54.5% of the variance. The final scale included four items (e.g., “Has your child’s emotions, behavior or learning capacity has limited your own activities or has changed your plans”; Cronbach’s $\alpha = .71$). Intercorrelations ($n = 72$) among subscales of the FCBS ranged from .33 to .44, all $p < .01$.

Parental Discipline Scale. We used an adapted version of the Parental Discipline Scale (Goodman et al., 1998), an 8-item scale about positive and negative parental disciplinary practices. Like Bauermeister and colleagues (Bauermeister et al., 2007), we used the scale on negative disciplinary practices which include yelling, emotional detachment and physical punishment. Factor analysis indicated one underlying factor that explained 66.3% of the variance with three items (e.g., “When your child does something wrong, how often do you yell at him?”; Cronbach’s $\alpha = .74$). Respondents circle one of four options from never/almost never to very often.

In structured interviews with the caretakers, we obtained demographic information on the children’s gender and age, their caretaker’s education, and the presence or absence (and type) of any treatment children were currently receiving for ADHD.

Results

Raw data were converted to *T* scores for purposes of analysis. Table 1 provides a comparison of mean scores of community children as rated by their parents and teachers on the Conners’ Rating Scales (CRS) and on the SDQ. We found a multivariate difference between girls and boys on the CRS and SDQ [$F(18, 981) = 4.03, p < .001$]. Parents rated boys significantly higher than girls on the CPRS ADHD Index and both the CPRS and the SDQ Hyperactivity subscales. Parents did not significantly rate boys as having more conduct problems and emotional symptoms than girls. No significant gender differences were found on parent ratings of the Cognitive Problems/Inattention and Oppositional subscales (CPRS) or on the SDQ Peer Problems and Prosocial subscales. On the other hand, teacher reports indicated significant higher scores for boys on all the CRS subscales (i.e., ADHD Index, Hyperactivity, Cognitive Problems/Inattention, and Oppositional) and on the SDQ Hyperactivity, Conduct Problems and Peer Problems subscales, whereas they rated girls as having more prosocial skills than boys. We did not find any significant gender differences in teacher-rated SDQ Emotional Problems.

Prevalence of ADHD Symptoms

We used the Conners ADHD Index to estimate the percentage of children in the community and clinical samples who

Table 1. Means (and Standard Deviations) of Conners' Rating Scales and Strengths and Difficulties Questionnaire Scores in the Community Group

Subscale	Total Sample ^a	Boys ^b	Girls ^c	F (1, 998)
Parent ratings				
Conners' Rating Scale-Revised-Short Form				
ADHD index	49.31 (9.25)	50.13 (9.94)	48.48 (8.42)	7.96**
Hyperactivity	49.38 (9.53)	50.05 (9.89)	48.71 (9.11)	4.99*
Cognitive problems/inattention	49.61 (9.75)	49.97 (10.03)	49.24 (9.45)	1.41 _{ns}
Oppositional	49.35 (9.29)	49.81 (9.71)	48.89 (8.83)	2.42 _{ns}
Strengths and Difficulties Questionnaire				
Hyperactivity	49.02 (8.31)	49.74 (8.08)	48.29 (8.47)	7.73**
Conduct problems	49.38 (9.39)	49.92 (9.56)	48.83 (9.19)	3.36 _{ns}
Emotional symptoms	49.78 (9.93)	49.21 (9.83)	50.37 (10.01)	3.40 _{ns}
Peer problems	49.14 (8.23)	48.84 (7.78)	49.45 (8.66)	1.39 _{ns}
Prosocial	50.40 (9.59)	50.15 (9.29)	50.66 (9.89)	0.69 _{ns}
Teacher ratings				
Conners' Rating Scale-Revised-Short Form				
ADHD index	49.41 (9.46)	51.28 (10.49)	47.52 (7.85)	40.91***
Hyperactivity	49.49 (9.56)	51.28 (10.81)	47.68 (7.71)	36.60***
Cognitive problems/inattention	49.71 (9.77)	50.59 (10.25)	48.82 (9.18)	8.22**
Oppositional	49.63 (9.72)	50.82 (11.29)	48.43 (7.65)	15.33***
Strengths and Difficulties Questionnaire				
Hyperactivity	48.96 (8.20)	50.39 (8.49)	47.51 (7.63)	31.91***
Conduct problems	49.20 (8.97)	50.59 (9.92)	47.80 (7.66)	24.68***
Emotional symptoms	49.62 (9.85)	49.89 (9.76)	49.34 (9.94)	0.78 _{ns}
Peer problems	49.21 (8.83)	49.89 (9.25)	48.53 (8.34)	5.93*
Prosocial	50.39 (9.76)	49.76 (9.73)	51.03 (9.75)	4.20*

Note: All values represent *T* scores.

a. *N* = 1,000.

b. *N* = 503.

c. *N* = 497.

p* < .05. *p* < .01. ****p* < .001.

might be at significant risk of having ADHD. In the community sample (*n* = 1,000), parents reported that 74 children (prevalence of 7.4%; 50 boys) whereas teachers reported that 87 children (8.7%; 63 boys) displayed significant levels of symptoms on to the ADHD Index. Using the "or" algorithm (i.e., CPRS-R S or CTRS-R S ADHD Index *T* score ≥ 65), we identified 139 at-risk children (13.9%; 94 boys) whereas using the "and" algorithm (i.e., CPRS-R S and CTRS-R S ADHD Index *T* score ≥ 65), we found only 22 children at risk for ADHD (2.2%; 19 boys) who would appear to meet established criteria for ADHD.

In the clinical sample (*n* = 36), 22 children (61%; 19 boys) were separately identified as at risk for ADHD by parents in comparison to 20 children (56%; 17 boys) by teachers. 26 children (72%; 22 boys) were identified using the "or" algorithm, whereas 16 children (44%; 14 boys) were identified using the "and" algorithm. In addition, we used the *DISC-IV* symptoms as another way of assessing the prevalence of ADHD symptoms in the clinical group. According to this measure, 25 children (69%; 18 boys) would qualify for *DSM-IV* (American Psychiatric Association, 2000)

Criterion A, all having at least 6 symptoms of inattention and/or hyperactivity.

Differences in Externalizing and Internalizing Symptoms

In order to see if children referred for ADHD have different levels of associated externalizing and internalizing difficulties than at-risk community or community controls, we first conducted a MANOVA using the CRS and SDQ completed by parents and teachers (see Table 2). We found a multivariate difference between these three groups in terms of externalizing and internalizing symptoms on the CPRS and SDQ [$F(28, 186) = 12.53, p < .001$]. Children clinically referred or at risk for ADHD were rated significantly higher than community controls on all CRS and SDQ externalizing and internalizing symptoms subscales.

Parents and teachers of children clinically referred for ADHD reported higher scores than those of at-risk community children on the SDQ Hyperactivity and Conduct Problems subscales. Parents also rated clinically referred

Table 2. Externalizing and Internalizing Symptoms by ADHD Status

	Clinically Referred for ADHD ^a	At-Risk From Community ^a	Community Controls ^a	<i>F</i> (2, 105)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Parent ratings				
Conners' Rating Scale-Revised-Short Form				
ADHD index	69.19 (11.08) ^a	67.70 (16.12) ^a	47.59 (6.35) ^b	37.16**
Hyperactivity	67.15 (7.25) ^a	60.27 (13.14) ^b	47.80 (8.85) ^c	34.23**
Cognitive problems/inattention	60.88 (10.92) ^a	63.69 (14.15) ^a	47.79 (6.78) ^b	21.31**
Oppositional	67.95 (12.30) ^a	61.93 (15.27) ^a	47.69 (7.81) ^b	26.25**
Strengths and Difficulties Questionnaire				
Hyperactivity	77.24 (14.03) ^a	53.47 (7.55) ^b	47.82 (8.72) ^c	79.87**
Conduct problems	67.21 (11.14) ^a	55.32 (11.47) ^b	46.97 (7.56) ^c	35.72**
Emotional symptoms	56.01 (10.25) ^a	54.01 (12.70) ^a	47.74 (9.28) ^b	5.70*
Teacher ratings				
Conners' Rating Scale-Revised-Short Form				
ADHD index	66.37 (10.90) ^a	66.84 (15.06) ^a	48.05 (7.28) ^b	31.11**
Hyperactivity	64.12 (11.62) ^a	66.20 (15.32) ^a	48.42 (8.31) ^b	23.26**
Cognitive problems/inattention	58.09 (12.78) ^a	61.01 (16.43) ^a	48.44 (8.17) ^b	9.36**
Oppositional	60.21 (12.16) ^a	64.66 (20.62) ^a	48.63 (5.90) ^b	12.18**
Strengths and Difficulties Questionnaire				
Hyperactivity	78.92 (12.19) ^a	55.78 (9.37) ^b	47.85 (8.46) ^c	91.40**
Conduct problems	72.17 (11.59) ^a	58.79 (13.20) ^b	48.04 (8.75) ^c	41.00**
Emotional symptoms	60.69 (8.15) ^a	57.63 (14.31) ^a	46.79 (7.78) ^b	17.34**

Note: All values represent *T* scores. Note restricted range for the at-risk community-based subsample; scores for this group are truncated at the cut-off for inclusion. Means within the same row with different subscripts differ significantly according to post hoc Tukey's HSD tests.

a. *N* = 36.

p* < .01. *p* < .001.

children as being more hyperactive on the CPRS hyperactivity subscale. However, parents and teachers did not report any significant differences in emotional symptoms on the SDQ between the clinical or at-risk community groups. Interestingly, we found no significant differences between the clinical versus the community at-risk group on any of the teacher rated CRS subscales. Similarly, we did not find any significant differences between these two groups on three out of four CRS parent-rated subscales (i.e., ADHD Index, Cognitive Problems/Inattention, and Oppositional).

Scores on the CRS for the at-risk community-based subsample were truncated at the cut-off for inclusion, potentially reducing the range of differences between the clinical and the community at-risk subsample. Hence, we conducted another independent analysis—using the data from *DISC-IV*—specifically comparing levels of *DSM-IV* (APA, 2000) externalizing disorder (ADHD, ODD, CD) symptoms in these two groups. We found an overall multivariate difference between these groups in terms of externalizing symptoms [$F(4, 67) = 6.33; p < .001$]. However, univariate tests showed that these differences were only significant for ADHD-related symptoms: children clinically referred had significantly higher levels of Inattentive

symptoms [Clinical group: $M = 5.36, SD = 2.43$; At-risk group: $M = 3.44, SD = 2.63$; [$F(1, 70) = 10.31; p < .01$]] and Hyperactive/Impulsive symptoms [Clinical group: $M = 6.03, SD = 2.76$; At-risk group: $M = 3.11, SD = 2.54$; [$F(1, 70) = 21.76; p < .001$]] than at-risk children from the community. No group differences were found in terms of Oppositional Defiant Disorder [$F(1, 70) = 1.16; p = .29$] or Conduct Disorder [$F(1, 70) = 1.34; p = .25$] symptoms.

Impairment of Family and Peer Relations

We also examined the differences in peer and family functioning between the clinical and the at-risk group, after statistically controlling for parent-reported hyperactivity symptoms. For this analysis, we compared the parent-rated Family Care Burden Scale, the parent-reported Negative Discipline Scale, and the SDQ parent and teacher ratings on the Peer Problems and Prosocial subscales, using the Conners parent-reported Hyperactivity symptoms as a covariate.

This analysis was useful to determine whether referral for professional help might be prompted not only by more severe symptoms but also by functional impairment. Our findings, summarized in Table 3, indicate that, on different

Table 3. Impairment of Family and Peer Relations After Controlling for Parent-Reported Conners Hyperactivity Symptoms

	Clinically Referred for ADHD ^a	At-Risk in Community ^a	F (1, 69)
Family Care Burden Scale	55.62 (10.20)	44.38 (5.80)	27.24***
Negative Discipline Scale	53.70 (9.25)	46.30 (9.44)	11.73**
SDQ-P			
Peer Problems	73.81 (20.49)	51.17 (9.50)	35.04***
Prosocial	38.81 (14.08)	47.97 (12.02)	9.07**
SDQ-T			
Peer Problems	71.81 (14.94)	55.39 (11.37)	21.73***
Prosocial	39.13 (10.69)	45.55 (12.00)	4.31*

Note: SDQ-P = Strengths and Difficulties Questionnaire-Parent Version; SDQ-T = Strengths and Difficulties Questionnaire-Teacher Version.

All values represent T scores.

a. N = 36.

* $p < .05$. ** $p < .01$. *** $p < .001$.

measures and by different raters, clinically referred children for ADHD were generally more impaired both in family functioning and in peer relations than were at-risk community children [$F(6, 64) = 14.73$; $p < .001$], even after statistically controlling for parent-reported hyperactivity symptoms on the Conners rating scale.¹ Specifically, in comparison to parents of community at-risk children, parents of the clinical sample reported that these children were causing a more important burden on their family, and that they used more negative discipline with their child. Both parents and teachers also rated clinically referred children as having significantly more problems with peers and less prosocial skills than at-risk children from the community.

Treatments for ADHD in Cuba

Given that medication of all kinds is very limited in Cuba, we explored the general pattern of treatments that the participants were receiving for any mental health conditions (including ADHD) in community and clinical settings. In the clinical sample of 36 children referred to medical settings for hyperactivity problems, floral therapy alone (25%) or combined with vitamin B6 (13.9%), thioridazine (an antipsychotic drug) and vitamin B6 (5.6%), carbamazepine (an anticonvulsant and analgesic drug) and vitamin B6 (5.6%), or thioridazine (2.8%) accounted for 52.8% of the medication used. 33.3% of children were receiving a combined pharmaceutical preparation of thioridazine and carbamazepine, which was associated with vitamin B6 in 6 cases. Only four children (11.1%) were receiving methylphenidate which was associated three times with thioridazine and once with carbamazepine, one child was treated with diazepam (2.8%).

Among the 1,000 community children, there were 40 children (4%) receiving psychological and/or psychiatric services for a mental health problem. Among the mental health problems reported were anxiety problems (50%), depressed mood problems (25%), hyperactivity (15%), learning problems (5%), and social adjustment problems (5%). The largest number of them (50%) was treated by floral therapy and 37.5% received psychological interventions. Carbamazepine was used by three children (7.5%) and thioridazine was used by 1 child (2.5%). Only one child (2.5%) was receiving stimulant medication, using only methylphenidate.

Among the 36 at-risk community children, there were 9 children (25%) receiving psychological and/or psychiatric services for a mental health problem. Among the mental health problems reported were anxiety problems (22%) and depressed mood problems (11%). 44% were treated by floral therapy whereas 14% received psychological interventions. Carbamazepine was prescribed for by 2 children (6%). No member of the at-risk community sample was treated with a stimulant medication.

Discussion

This is the first study to assess the correlates and impairment of family and social functioning in children referred for ADHD in Cuba. Our results generally indicate that referred or community at-risk children for ADHD were rated by parents and teachers as displaying higher levels of externalizing and internalizing symptoms than community controls. This is in line with other studies showing that ADHD is a very comorbid condition associated with various externalizing and internalizing conditions both in clinical and community settings (e.g., Bauermeister et al., 2007; Wilens et al., 2002). Clinically referred children displayed higher levels of hyperactivity than at-risk but not referred children. Interestingly, parents did not report higher levels of ODD or CD symptoms for the clinically referred group than for the at-risk group. Perhaps the individual attention and structure of Cuban classrooms attenuates such symptoms, especially at the participants' young age (6-8 years old).

Impairment of interpersonal functioning was another important distinguishing feature of the clinical group. Our findings indicate that parents and teachers perceived clinically referred children for ADHD as being more impaired in both family functioning and peer relations than at-risk community children, after controlling for parent-reported hyperactivity symptoms. These results were not surprising given that it is more often functional impairment, not the core ADHD symptoms, which predicts referral and long-term outcome of children with ADHD (Pelham et al., 2005). These results also corroborate North American data on the

impact of ADHD on family (e.g., Barkley et al., 1991) and peer functioning (e.g., Hoza et al., 2005).

The referred group consisted predominantly of boys, as is the case in most other countries (e.g., Polanczyk et al., 2007). Within the community sample, boys were rated in general as having higher levels of ADHD symptoms and other associated externalized symptoms. More specifically, as compared to community girls, parents and teachers reported that boys from the community were more at risk for having ADHD and generally had higher levels of hyperactivity. Furthermore, teachers (but not parents) perceived that boys had more opposition, conduct problems, cognitive problems/inattention, peer problems, and less prosocial skills than girls. Neither parents nor teachers reported any gender differences in internalizing symptoms, which is generally similar to results from other countries (e.g., Gaub & Carlson, 1997).

Limitations and Future Directions

These results reflect, of course, the methods we used. Despite the fact that the use of behavioral ratings with different cultural groups should be undertaken with caution, the current findings generally support the usefulness and validity of the parent and teacher behavior rating scales in screening for ADHD. Their combination provides particularly good classification of cases. In addition, their factor structure in Cuba is interpretable and quite similar to the original. The fact that teacher-parent concordance is relatively low (but still significant and nonetheless similar to teacher-parent agreement generally reported in North America) may reflect the different expectations regarding children's behaviors that are context specific. This lower interrater agreement may also reflect the relative unfamiliarity of these tools in Cuba. As in other countries, teachers may be better able to compare an individual child with others his or her age, perhaps mitigating any tendency to alarm. Parents of children beginning school may have a narrower perspective, especially in Cuba where the birthrate has declined markedly.

The limited resources provided for this study restricted our ability to administer structured clinical interviews to a larger sample. In Cuba, questionnaire methods are unfamiliar to parents and teachers, as they would be in many cultures outside of North America and Europe. Weisz et al. (e.g., 1988), working in Thailand, Jamaica, and the United States found a confusing pattern of cross-cultural differences when questionnaires were administered in these countries. Subsequent observational research was necessary to clarify and understand the differences between the countries in children's internalizing and externalizing behaviors. There is therefore a need for a larger-scale epidemiological study in Cuba with the resources needed to conduct individual interviews on a large scale. Such interviews would

allow researchers and informants to clarify ambiguous questions, allow for categorical diagnostic confirmation, and therefore permit more solid conclusions regarding prevalence. Results limited to this particular age range may not be representative of other developmental periods as ADHD is known to manifest itself differently over time: Although hyperactive symptoms often abate somewhat as children mature, inattentive symptoms are more likely to remain prominent (Biederman, Mick, & Faraone, 2000).

Although very preliminary, our results suggest that ADHD may be underdiagnosed and undertreated in Cuba, but also not treated with psychosocial, pharmacological or multimodal treatments commonly used for this condition in children (e.g., Hinshaw, Klein, & Abikoff, 2007). Although prevalence rates vary considerably across studies (Polanczyk et al., 2007), the prevalence rate found in this study appears to be substantially lower than those reported by researchers using the "and" algorithm (parents and teachers) in developing countries (e.g., Pineda, Lopera, Palacio, Ramirez, & Henao, 2003). Underdiagnosis and undertreatment of ADHD has also been reported in other Latin American developing countries (Polanczyk et al., 2008). There may be important cultural factors associated with the lower rates of identification and referral. Tolerance for inattentive and hyperactive behaviors may be higher in Cuba than elsewhere. Cuban schools may be better than others in managing disruptive behavior because of their small classrooms and professional training of Cuban teachers, relatively structured organization of Cuban schools, and greater social support available from the whole family and community.

It is impossible to know the extent to which current practices regarding stimulant medication derive purely from the lack of its availability. However, our impression is that it is not only lack of ability that guides the limitation of medication to the most severe cases but also genuine belief in the viability of other treatments.

It would be interesting for researchers to try determining the beliefs of Cuban professionals regarding the acceptability of prevailing methods of treatment for ADHD. This may involve, first of all, the judicious use of focus groups. In addition, parents and teachers may also systematically rate their feelings regarding the acceptability of various treatments using questionnaires provided after they have listened to vignettes describing the treatments (see Schneider, Kerridge, & Katz, 1992).

Conclusion

Recent studies (Buitelaar et al., 2006) and meta-analysis (Polanczyk et al., 2007) clearly show that children with ADHD are characterized by a very similar pattern of symptoms, comorbidities and functional impairment across continents. Our results globally suggest that referral for professional attention for ADHD in Cuba depends not only

on the severity of the ADHD symptoms but also on concomitant effects on family and peer functioning.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interests with respect to their authorship or the publication of this article.

Funding

This study was supported by an International Opportunities Fund grant from SSHRC (801-2006-0016) and by an International Creative Research Award from the University of Ottawa (108640). We are grateful to all the Cuban parents and teachers who participated in this study. We also gratefully thank José J. Bauermeister, Glorisa Canino, and Pedro García for their generous assistance in providing us the Spanish versions of the NIMH Diagnostic Interview Schedule for Children—version IV, Family Burden Scale, and Parental Discipline Scale.

Note

1. We repeated this MANCOVA several times, using different Conners, SDQ and *DISC-IV* scores as covariates; there was no variation from the pattern reported in text for the Multivariate *F* values and almost no variation in the follow-up ANOVA results.

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