ADHD and Psychopathy in Adolescent Asian-Americans: A Cross-Sectional Analysis

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Research Article

Keywords:

Posted Date: July 20th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1874812/v1

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ADHD and Psychopathy In Adolescent Asian-Americans: A Cross-Sectional Analysis

Abstract

Background

The positive association of attention-deficit/hyperactivity disorder (ADHD) on the development of psychopathic traits in White-American juveniles has long been demonstrated in various studies. Less is known, however, about the role of specific attention-deficit/hyperactivity disorder symptomatology and how they interact with each dimension of the three-factor model of psychopathy in Asian juveniles.

Objective

The purpose of this paper is to explore the relationship between Asian-American juveniles with ADHD as evaluated by the ADHD Rating Scale-5: For Children and Adolescents (ADHD-RS-IV), and the exhibition of psychopathic traits as measured by the Youth Psychopathic Traits Inventory (YPI; Andershed et al. 2002). Previous studies have examined the prevalence of attention deficit and hyperactivity disorder (ADHD) in White-American prison inmates and in forensic patients with psychopathic traits. However, it is not clear whether ADHD and psychopathy scores also correlate in Asian, teenage non-incarcerated samples.

Measures

This is a quantitative survey investigating the relationship between 1000 Asian teenagers exhibiting characteristics of ADHD as evaluated by the ADHD Rating Scale-5: For Children and Adolescents (ADHD-RS-IV) and the exhibition of psychopathic traits as measured by the Youth Psychopathic Traits Inventory (YPI; Andershed et al. 2002).

Limitations

The sample size is relatively small and the results should be appropriately considered as an indication rather than a generalization.

Conclusions

Pearson’s matrix showed a positive and significant correlation coefficient (0.91) for ADHD subscores and dimensions of psychopathy. In our Asian-American sample, males (49%) scored on average 5.1 points higher than females in the ADHD scale, and on average 8.5 points higher in the YPI scale. Interestingly, in the female population, a higher correlation was found between the hyperactivity (HI) subscore and the callous-unemotional (CU) subscore while in the male population, a significant correlation was found between the HI subscore and grandiose-manipulative (GM) subscore.

Background
Diagnosis of attention-deficit/hyperactivity disorder (ADHD) across cultures

Attention-deficit/hyperactivity disorder (ADHD) is the most commonly diagnosed mental health disorder in US children [1-3]. An ADHD diagnosis allows students and youth to access adaptive educational programming in educational institutions, as well as medication that can aid in the mitigation of the disorder’s negative impact on both learning and behavior [4-6]. Yet, not all groups of children are equally likely to be diagnosed and receive equitable treatment. Racial and ethnic minorities, in particular, have been reported to be diagnosed with ADHD at lower rates than white children and therefore may have unmet treatment needs [7, 8]. In addition, racial and ethnic minorities who are diagnosed with ADHD have been reported to be less likely to use prescription medication [2,10]. Hypothesized enablers for ADHD diagnosis and treatment disparities include less frequent access to health professionals and service utilization [11-14] and, when seen, less frequent solicitation by professionals of developmental concerns [15]. Additionally, a lower likelihood of referral by school mental health professionals and pertinent negative attitudes towards a disability identification and treatment in some racial or ethnic subcultures are also hypothesized to be a mechanism for the existing disparities [16, 17].

Research investigating ADHD diagnosis and treatment has typically used cross-sectional designs or convenience samples [2, 18] or focused on limited time frames [7]. The onset and over-time dynamics of racial/ethnic disparities in ADHD diagnosis throughout early and middle childhood are unknown. Yet, early diagnosis and treatment are important because ADHD symptomatology persists by early childhood [19, 21]. In addition, the extent to which other factors confound reported racial/ethnic disparities in ADHD diagnosis and treatment is unclear. Minority children are more likely to be exposed to risk markers for ADHD, low parental education, low household income, greater frequency of classroom problem behaviors, and lower academic achievement [1, 22-24]. The inclusion of confounding factors is therefore necessary to obtain estimates uniquely attributable to children’s status as racial/ethnic minorities.

However, environmental and sociocultural influences can make the diagnosis of psychiatric disorders challenging, and appreciating these influences should be a priority in academic psychiatry. This can be particularly true for the provision of a diagnosis of ADHD, as complex conditions can be nuanced. When controlling for confounding variables such as adverse childhood experiences, prior juvenile offenses, genetics, and sociodemographics, these diagnostic and treatment disparities remain. Although the cause of these diagnostic disparities is multifactorial, there is concern that unconscious biases may play a role in diagnostic decision-making. As a result of these biases, psychiatrists and trainees may judge and interpret behaviors seen in ODD, CD, and ADHD differently based on race or ethnicity, putting vulnerable populations at risk [32, 33]. Additionally, the current standard of practice is to routinely consider a broad differential of comorbid disorders when youth exhibit disruptive symptoms; however, biases may lead clinicians less likely to explore these potential explanations for behavior [10,11,12]. When a diagnosis of another behavior disorder is provided in place of ADHD, there are significant clinical implications, as this can limit access to medications,
therapy, and other supportive services. This lack of services can put ethnic and racial minority children at risk for perpetuating the disparities which currently exist in the medical, educational, and juvenile justice systems.

**Comorbidity of psychopathic traits and ADHD**

Psychopathy and ADHD share much in common, but it is important to point out here that few symptoms of mental disorders are specific to particular disorders [25]. For example, depressed mood can be found in a range of conditions and individuals with ASD may show a lack of empathy but they rarely show the grandiosity and self-pathology that you would observe in psychopathy. Frick, Bodin, and Barry (2000) [26] found that there were diagnoses of ADHD ranging from 80-100% of their samples of “psychopathic children”. Findings indicated that the emotional features of psychopathy are not impaired in ADHD whereas the behavioral features of psychopathy are present in ADHD. This is consistent with the model proposed by Colledge and Blair (2001) [25], which argues that psychopathy and ADHD share certain features such as impulsivity and antisociality, but not an impaired emotional processing ability which is common in individuals with psychopathy [27]. Additionally, Christian, Frick, Hill, Tyler, and Frazer (1997) [28] identified a sample of children whom they considered to exhibit psychopathic features. Interestingly, all the children in the psychopathic conduct cluster (n =11) had an ADHD diagnosis. Therefore, it is in line with existing research to examine if there is a potential ADHD symptom subgroup displaying and influencing certain dimensions of psychopathic traits.

**Cross-cultural studies on psychopathic traits in Asia and the West**

Research on psychopathic features has been limited largely to the United Kingdom, United States, Australia, Canada, and Europe [26]. It is thus unclear if these findings from Western populations generalize to the Asian cultures, especially as there is little evidence for the generalizability of psychopathy across ethnic groups. Past reviews examining psychopathy in relation to outcomes such as criminal recidivism in youth and adults have instead reported some variation in these associations based on country of origin and ethnicity, including a weaker relationship between violent recidivism and psychopathy where there is a higher proportion of non-white juveniles [26]. Further, cross-cultural differences have been reported in other related constructs. For instance, it has been proposed that in East and South East Asia, a tendency toward conformity with social expectations and an emphasis on group harmony over individual desire, may account for the lower levels of conduct problems that have been observed in such populations compared to those from Western countries [34].

**The current study**

The aim of this paper is to investigate if there are Asian-American youths displaying psychopathic dimensions (grandiose-manipulative, callous-unemotional, and thrill-seeking/irresponsible) with high levels of ADHD symptoms (inattention subgroup and hyperactivity/impulsivity subgroup). We expect to find groups with varying levels of
psychopathy subscores and ADHD symptoms given the normative nature of the sample. We hypothesize that the subgroups will differ significantly from each other on variables of interest, specifically sex assigned at birth.

Methods

Participants and Procedure
A total participant pool included 1000 Asian teenagers between the ages of 13 to 18 in several Ohio public high schools were studied (mean age 15.23, SD = ± 1.448, 51% female). All participants were informed about the purpose of the study, the possibility not to participate and to withdraw their participation at any time. All participants completed and turned in two self-report scales, the ADHD-RS-IV and the YPI.

Measures
The ADHD Rating Scale-IV (ADHD-RS-IV) is rating scale designed and validated to assess current ADHD symptomatology as described in the DSM-5, and is one of the most frequently used assessments in ADHD clinical studies. The scale consists of 18 items that directly correspond to the 18 DSM-5 ADHD symptoms, which are further subdivided into two subscales: Inattention and Hyperactivity/Impulsivity (9 symptoms/items per subscale). On the ADHD-RS-IV scale, the individual rates the frequency of each symptom or behavior over the preceding week on a 4-point Likert scale ranging from 0 (no or rare symptoms) to 3 (severe or frequent symptoms). The sum of scores for the 18 items provides the total score (ranging between 0 and 54). The items are based on the DSM-IV criteria for ADHD, divided into the subscale’s hyperactivity, impulsivity, and attention problems.

The Youth Psychopathic Traits Inventory (YPI) is a self-report tool designed to capture psychopathic traits in the normal population amongst youths from the age of 12, and was used to measure the three-factor dimensions of psychopathy. The diagnostic instrument consists of 50 items and is based on the three-factor model comprising the grandiose-manipulative, callous-unemotional and impulsive-irresponsible dimensions of psychopathy.

Statistical Analysis
Descriptive statistics and internal consistency reliability were calculated using SPSS (Version 24). We obtained the inattention (IA) subscale raw score and the hyperactivity-impulsivity (HI) subscale raw score from the ADHD-RS-IV responses by calculating the sum of the highest scores that was generated for the prompts for each item, with the first nine items contributing to the IA subscale and the last nine contributing to the HI subscale. The highest possible score for each subscale was twenty-seven and the highest possible total score was fifty four. The raw scores for each dimension of psychopathy from the Youth Psychopathic Traits Inventory was calculated by adding the sum of the responses of the five prompts corresponding to each item, with the first four items (dishonest charm, grandiosity, lying, manipulation) contributing to the grandiose-manipulative (GM) dimension, the next three (remorselessness, unemotionality,
callousness) contributing to the callous-unemotional (CU) dimension, and the last two (thrill-seeking and irresponsibility) contributing to the revised thrill-seeking and irresponsible dimension (TI). The impulsiveness item was removed due to the existing common variable (hyperactivity/impulsivity subgroup) already measured by the ADHD-RS-IV scale to prevent false correlation. To test for the consistency and validity of both the existing and revised construct, confirmatory factor analysis was performed and results shown in Figure 1. The highest possible scores for each dimension were 60, 45, and 30 respectively, with the highest total possible score being 135.

Multivariate correlations (Table 2) were assessed using Pearson’s correlation matrix in the software R (version 4.2.1; R Core Team, 2022) and the apaTables package (Stanley, 2021) to investigate sex’s effect on the correlation strength between ADHD symptoms and dimensions of psychopathy. Box-plot analysis (Figure 2) was conducted to identify any outliers using the ggplot2 package in R (Wickham H, 2016). T-tests were carried out to observe differences in total scores between females and males.

**Results**

**Descriptive Statistics**
Mean, standard deviation, as well as minimum and maximum scores of all subscores of the ADHD-RS-IV and YPI scales in the sample are demonstrated in Table 1.

> table 1 <

Interpretations of a mean ADHD-RS-IV raw score of 30.8 are that symptoms are within the normal range, and in clinical pre-assessment screening situations, further judgment is needed for a diagnosis [35]. The data indicated that most people scored in a normal range in the YPI scale, with a few people scoring in the higher ranges. The ranges for both ADHD-RS-IV (range = 46) and the YPI (range = 94) scores capture a diverse sample.

**Confirmatory factor analysis**
The validity of the subscales as measured by the self-report ADHD-RS-IV and the existing dimensions (GM and CU) and revised construct (TI) of the Youth Psychopathic Traits Inventory were assessed using confirmatory factor analysis. Internal consistency between factors and latent variables on both scales used proved to be in the good to excellent range, with all factor loadings greater than or equal to 0.7 (Figure 1 and 2).

> figure 1 <  > figure 2 <

**Outliers**
Boxplot analysis of the total YPI scores recorded by all participants showed an outlier with a score of 106 (Figure 3).

> figure 3 <
The mean YPI score in the total sample was 51.85. However, there were no outliers of interest in the ADHD-RS-IV total scores, thus the participant’s score was not discarded in further statistical analysis.

**Correlation between subscores**

The variables correlated as expected, with Pearson’s matrix showing a positive and significant correlation coefficient (0.91) for the ADHD-RS-IV total scores and YPI total scores, and a p value of <.01 between all subscores across the two scales. All significant coefficients fall within the confidence interval.

Notably, the thrill-seeking/irresponsible (TI) subscore had the highest subscore correlation with the ADHD-RS-IV total score with a coefficient of 0.80, while the callous-unemotional (CU) dimension correlated the least to the total ADHD score with a coefficient of 0.59 in the general sample. The inattention (IA) subscore had a higher subscore correlation with the YPI total score than the hyperactivity/impulsivity (HI) subscore (r=0.80). Interestingly, the grandiose-manipulative (GM) dimension was the only dimension of psychopathy with a higher correlation to HI subscore (r = 0.59) than to the IA subscore (r = 0.56).

**Sex differences in total scores and subscore correlation**

In our Asian-American sample, males (49%) scored on average 5.1 points higher than females in the ADHD scale, t(97.83) = -2.549, p<.05. Males also scored on average 8.5 points higher in the YPI scale, t(97.892)=-2.4351, p<.05. Interestingly, in the female population, a prominently higher correlation was found between the hyperactivity (HI) subscore and the callous-unemotional (CU) subscore (r=0.79) while in the male population, a significant correlation was found between the HI subscore and grandiose-manipulative (GM) subscore (r=0.76).

**Discussion**

Our findings indicate that just as in White-American youth, adult, and forensic populations, Asian-American youth display a strong positive relationship between traits of attention-deficit hyperactivity disorder and certain dimensions of psychopathy. Secondly, consistent with existing literature, males in our sample scored higher than females on average on both scales. Research on gender differences suggests that girls may be consistently underidentified and underdiagnosed mostly explained by differences in the expression of the disorder among boys and girls [36].

Thus, this paper’s study of the subscore correlations contribute to new findings that gender attributes to differences in characteristics of psychopathology and psychopathy dimensions. Analysis conducted demonstrates the presentation of interpersonal (grandiose-manipulative dimension) versus affective traits (callous-unemotional dimension). Perhaps the most significant
finding of the study is that affective features (e.g., callous, unemotional) of psychopathy exhibit associations with ADHD symptoms stronger in Asian-American females, while interpersonal features of psychopathy exhibit associations with ADHD symptoms stronger in Asian-American males. Still, our findings must be considered exploratory, and replications are needed before conclusions can be drawn. These interpersonal and affective features are associated with a socially deviant lifestyle that includes irresponsible behavior and a tendency to ignore or violate social conventions and mores [37]. Although not all persons with psychopathy come into contact with the criminal system, their defining features place them at high risk for aggression and violence. The etiology of the interpersonal and affective traits and its associations with differences of sex have to date received little attention, making it an area that warrants expansion.

The high overlap in reported symptoms highlights the importance of thorough clinical assessments to be able to distinguish psychopathic personality traits from ADHD and lessen the risk of misdiagnosis. Further, it points to the need of finding discriminative measures possibly linked to etiological underpinnings to examine the clinical implications as well as the inclusion of other racial groups. In the area of mental illness stigma, identifying cultural differences in the sources of prejudice of mental illness between the East and West could be helpful in understanding the etiology of disorders such as ADHD and psychopathy.

**Limitations**
The normative nature may have excluded individuals with extreme levels of psychopathic traits, preventing us from drawing valid external conclusions to clinical settings. The self-report method of data collection also has inherent limitations, including being subject to internal biases that may skew responses such as varying levels of introspective ability of the participants. The sample size is relatively small and the results should be appropriately considered as an indication rather than a generalization.

**Conflicts of Interest**
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**References**


3. Sciutto MJ, Eisenberg M. Evaluating the evidence for and against the overdiagnosis of ADHD. *J Atten Disord.* 2007;11(2):106–113


Figures

Figure 1
Confirmatory factor analysis on the Youth Psychopathic Traits Inventory with revised Thrill-Seeking/Irresponsible construct with factor loadings and latent variables.

Figure 2
Confirmatory factor analysis on the ADHD-RS-IV with factor loadings and latent variables.

Figure 3
Box plot and outlier analysis of total YPI score
Figure 3

Boxplot analysis of the total YPI scores recorded by all participants

Supplementary Files

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