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The Clinical Course of Antisocial Behaviors in Men and Women of Three Racial Groups

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Abstract

Aims—To describe the clinical course and symptom profile of DSM-IV Antisocial Personality Disorder (ASPD) and the syndrome of Adult Antisocial Behavior Syndrome (AABS) and determine if they differ based on sex and race.

Methods—Using questions from a validated semi-structured interview, data were gathered from 2 independent family studies in: 1) American Indians (AI), and 2) European Americans (EA), African Americans (AA) (total n=7171) who reported antisocial symptoms.

Results—Within these two samples 1148 (16%) individuals met ASPD criteria, 1932 (27%) met adult ASPD but not childhood conduct disorder (CD) (i.e., AABS). The clinical course of the antisocial behaviors studied did not differ based on race or sex; however, individual symptom counts, and age of onsets of those symptoms, were significantly different across the groups. Women reported fewer symptoms and at an older age (less fights, school suspensions/expulsions, arrests or jail time), than men but were more likely to run away from home. Those with ASPD vs. AABS had more symptoms overall including experiencing remorse. AA and AI participants and those with ASPD, had more symptoms, and were more likely to be suspended/expelled from school and arrested at a younger age than EA.

Conclusion—In these select samples, the order and sequence of antisocial behaviors did not differ by race, AASB vs. ASPD, or sex; however individual symptom endorsement did, with men (vs. women), those with ASPD (vs. AABS), AI and AA (vs. EA) reporting more suspensions/ expulsions from school and arrests. This suggests further study of the possible role of race and sex in the consequences associated with antisocial syndromes is warranted.

Keywords

American Indians; African Americans; Antisocial Personality Disorder; Conduct Disorder; clinical course

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1. Introduction

The diagnostic category of Antisocial Personality Disorder (ASPD) is used to describe individuals with a persistent set of symptoms that include disregard for, and violation of, the rights of others that typically begins in childhood or early adolescence and persists into adulthood (see Black, 2015; Brazil et al., 2018; Fairchild et al., 2013; Fisher and Hany, 2022; Glenn et al., 2013; Raine, 2018 for reviews). The criteria for DSM-IV and DSM-5 ASPD includes behaviors such as crimes that are grounds for arrest, repeatedly engaging in fights or assaults, lying and use of aliases, failure to sustain work, disregard for the safety of oneself and others, and mistreatment of others. The prevalence of ASPD, as shown in epidemiological studies, based on DSM criteria, suggest that it occurs in 2-4% of men and .5-1% of women in the US population (Compton et al., 2005; Grant et al., 2004). In correctional settings, rates of ASPD as high as 21% in women and 47% –80% in men have been reported depending on the study (Black et al., 2010; Fazel and Danesh, 2002; Guze, 1976). ASPD is associated with a number of co-morbid mental health conditions and with most substance use disorders (Ullrich and Coid, 2009; Zimmerman and Coryell, 1989). People with ASPD have high mortality rates from traumatic injuries, suicide and infections such as hepatitis C and human immunodeficiency virus (HIV) (Black et al., 1996; Brooner et al., 1993; Krasnova et al., 2019; Martin et al., 1985; Woodruff et al., 1971).

Familiarity with the clinical course of a disorder by treatment providers could potentially lead to early recognition of the syndrome and may help to guide the format and timing of prevention and intervention strategies. According to the DSM definitions, the clinical course of ASPD typically begins in early childhood, with one study suggesting that 80% of people with ASPD develop their first symptom by age 11, with boys developing symptoms earlier than girls (Robins, 1966; Robins, 1978). ASPD, as defined by DSM IV and DSM-5, requires a history of childhood conduct disorder (CD). If the behavioral problems persist into adulthood the diagnosis is then changed to ASPD. Of those children who meet criteria for CD, 25% - 40% eventually meet criteria for ASPD depending on the population studied (Nock et al., 2006; Robins, 1978; Rubin, 2020).

While not part of the DSM, some clinicians label adults who meet adult criteria for ASPD but have no history of childhood CD as adult antisocial behavioral syndrome (AABS). In early studies, these individuals were reported to have "milder syndromes" compared to those who met DSM criteria for ASPD (Black and Braun, 1998; Langbehn and Cadoret, 2001). Recent findings from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) suggest that AABS may be at least twice as common as ASPD (Compton et al., 2005; Goldstein et al., 2017) and may have similar sociodemographic and psychiatric correlates as well as disability (Goldstein et al., 2017; Marmorstein, 2006; Marmorstein and Iacono, 2005; Tweed et al., 1994).

A number of authors have suggested certain symptoms (e.g., callous unemotional traits, aggression, rules violations, impulsivity, and fearlessness), as well as their age of onset and persistence (early childhood onset, adolescent limited, late onset) might be useful in predicting the clinical course of ASPD and AABS (Blair et al., 2014; Camp et al., 2013; Fairchild et al., 2013; Fanti, 2018; Jolliffe et al., 2017; Loeber and Burke, 2011). These studies have in large part been conducted in high risk males, and/or in incarcerated men and women, and there are a paucity of studies as to whether the clinical course differs, based on race or sex, in larger community samples of adults (see Garb, 2021; Tully et al., 2021).

One obstacle to the investigation of the clinical course of ASPD and AABS in general population or clinical samples is the development of a standardized instrument that would be suitable for a clinician to use to retrospectively assess the major symptoms and behaviors of ASPD and AABS *and their occurrence over time*. Schuckit et al.(Schuckit et al., 1993), using a structured personal interview incorporated into the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA), successfully indexed the clinical course of another set of correlated disorders, alcohol use disorders, based on the age and relative order of appearance of 36 major alcohol-related life events. This approach had the advantage of allowing the recording of the events in an objective and verifiable manner over time in either large general population or high-risk samples. Using this instrument Schuckit and colleagues (Schuckit et al., 1995; Schuckit et al., 1993; Schuckit et al., 2002) reported a high level of similarity in the clinical course of alcohol dependence across various subgroups with alcohol use disorder (e.g., inpatients vs. outpatients, males vs. females, presence vs. absence of family history of alcohol dependence, primary vs. secondary diagnoses). Subsequent studies, using this instrument, also demonstrated that the clinical course of alcohol dependence did not differ among the major U.S. racial/ethnic groups (Ehlers et al., 2010; Ehlers et al., 2015;

Ehlers et al., 2004b; Hesselbrock et al., 2000; Montane-Jaime et al., 2008; Scott et al., 2008).

Knowing whether the clinical course of antisocial behaviors may differ depending on sex and race is important for several reasons. First, antisocial behaviors in women are becoming more widely recognized and female prisoners are one of the fastest growing segments of the criminal justice system world-wide. While the number of males incarcerated has increased by around 20%, women and girls in prison has increased by 50% since 2000 (Javdani et al., 2011; Walmsley, 2017). Second, despite this change few quantitative data are available about the differences between males and females, or across racial/ethnic groups in the expression of the antisocial behaviors that lead to the diagnosis of either AABS or ASPD in population based samples. Third, these findings might not support the suggestion by some authors that antisocial personality syndromes may be neuro-developmental disorders with a sexually dimorphic behavioral expression (Raine, 2018; Tully et al., 2021). If the clinical course differs by sex or race, then knowing those differences may also help to refine and guide diagnosis and treatment strategies that could lead to early interventions (see Brazil et al., 2018; Raine et al., 2021). However, if some symptoms are more likely to be diagnosed in some racial groups because of cultural "bias", then "labeling" individuals with a diagnosis of disease may over-estimate disease prevalence and lead to stigmatization of individuals, racial groups, and communities (see Garb, 2021).

1.1 Aim of the study

The purpose of the present set of analyses was to use data derived from the standardized SSAGA interview to describe the clinical course of ASPD and to gather similar data on the syndrome of AABS in both men and women of three racial groups.

This approach was applied to data collected from adults who participated in two independent family-based studies: 1) one study that sampled European Americans (EA) and African Americans (AA), and 2) another study that sampled American Indians (AI). Our overarching Hypothesis 1, based on previous studies in these populations on alcohol use disorders (Ehlers et al., 2010; Ehlers et al., 2015; Ehlers et al., 2004b; Schuckit et al., 1993), was that a substantially similar clinical course of antisocial behaviors (as defined by the order and progression of the antisocial symptoms in the SSAGA) would be seen between the sexes, racial groups and whether an individual had AASB or ASPD, although the prevalence of individual items and their ages of onset were expected to differ between the groups. In Hypothesis 2, based on the literature demonstrating that African Americans and American Indians are more likely to be incarcerated than whites (see Minton and Golinelli, 2014; Vogel and Porter, 2016) we predicted that the prevalence of individual antisocial behaviors would differ across sex and racial groups. We also predicted than men of any race/ethnic ancestry, would have higher overall symptom counts. We also predicted that American Indians and African Americans, would have more school suspensions/expulsions, (as has been demonstrated in the literature (see Brown, 2014; Riddle and Sinclair, 2019) a behavior that is not currently part of the DSM criteria, and arrests for antisocial behaviors.

2. Method

2.1 Participants and settings

The AI participants were recruited from the local San Diego community for larger studies investigating risk factors for substance dependence. These individuals were recruited from eight geographically contiguous reservations with a total population of about 4,000 individuals, as described previously (Ehlers et al., 2004a; Ehlers et al., 2004b). Based on the aims of the larger studies, AI participants were excluded if they were pregnant, nursing, or currently had a major medical disorder that precluded them traveling to the research site. Participants were asked to refrain from alcohol or recreational drug use for 24 hours prior to testing, and their breathalyzer blood alcohol levels had to be 0.00 g/dl to be included in the study. The EA and AA participants were selected for the Collaborative Study on the Genetics of Alcoholism (COGA) at seven sites across the United States including Farmington, CT., Indianapolis, Iowa City, New York City, San Diego, St. Louis, and the greater Washington DC area. Individuals who identified their ethnicity as Hispanic or Asian were not included in the analyses due to insufficient numbers of individuals in the datasets.

2.2 Measures

Participants in both studies completed a SSAGA interview (Bucholz et al., 1994) which collected information including demographics, psychiatric history, and symptoms and onsets of substance use disorders, conduct disorder and antisocial personality disorder. Data from phase 2 of the COGA study, collected from 1995-2000, were used, as these included a full ASPD diagnostic section administered to everyone without structured skip-outs and also obtained ages of first and last occurrence for each behavior reported. Lifetime diagnoses used for the group assignments were generated from the responses to the interview questions, using scoring algorithms that were developed specifically for the SSAGA by experienced clinicians and researchers. Separate scoring algorithms were written for DSM-3R, DSM-IV and ICD-10 classification systems. The present analyses were based on DSM-IV symptoms and disorders. The SSAGA, when used as an instrument by trained interviewers and reviewed by clinical researchers, has high levels of diagnostic reliability, with kappa estimates for alcohol dependence of .84, for other substance dependence ranging from .70-,90, and for ASPD of .70 (Bucholz et al., 1994). Validity as assessed using the SCAN as the gold standard, was high as well, with sensitivity of 92% for alcohol dependence and ranging from 67%-100% for other substance dependence, while sensitivity for ASPD was 82% (Hesselbrock et al., 1999).

2.3 Analyses

The clinical course of ASPD and AABS within the EA, AA, and AI samples was investigated using CD/antisocial behaviors derived from the SSAGA. We evaluated the relationship of each participant's self-reported sex and racial group to DSM-IV criteria for either CD/ASPD diagnoses or criteria for an AABS syndrome (i.e., meet criteria for adult ASPD but not childhood CD). For each of these sets of analyses, the endorsement of having experienced each of the 29 events as well as the age at first occurrence of 21 of these events were tabulated. Comparisons of the number of events endorsed, their age of onset, and whether those numbers differed across subgroups were evaluated using the

chi-square test, ANOVA (age of onset), and logistic regression controlling for age, education and income when these variables were significantly different between the groups compared in the analyses. After describing the pattern of appearance of problems for all participants, the similarity in the retrospective reports of the age of first appearance of problems was compared utilizing Spearman's rank order correlation (rho), which measures the degree of similarity of the order of the events across groups of subjects. Additionally, we tested the hypothesis that school suspensions/expulsions would be more likely in males and in the African American and American Indian subgroups and would be associated with higher overall antisocial symptom counts. In those analyses participants who had been suspended/expelled from school were compared on: race, sex, economic status, diagnosis (AABS vs. ASPD), whether they also endorsed being arrested, and their total antisocial symptom counts to those who had not experienced school suspension/expulsion, using chi square for dichotomous variables and ANOVA for continuous variables. Significance for all analyses was set at $p< 0.001$ to correct (Bonferonni) for multiple comparisons of the 29 antisocial behaviors.

3.0 Results

3.1 Participant Characteristics

Data from 7171 participants from the two studies were available for the analyses including 1879 African Americans, 4420 European Americans, and 872 American Indians. Within this sample, 1148 (16%) individuals met both CD and ASPD criteria, 1932 (27%) met adult ASPD but not CD (i.e., had AABS), 212 (3%) had CD only, and 3879 (54%) had at least one antisocial symptom but did not fit into any of the 3 diagnostic categories (ASPD, AASB, CD). Subsequent analyses focused only on the 3080 individuals in the two most prevalent diagnostic groups namely ASPD and AASB and their their demographic information is presented in Table 1. The two groups did not differ on the proportion of participants in the three racial groups or on the proportion with yearly incomes below $20,000; but those with ASPD were more likely to be male, younger, and have a lower level of education.

3.1 Clinical course of antisocial behaviors

Table 2 presents the subjects' retrospective reports of the sequence of occurrence of antisocial events in the 3080 participants in the two diagnostic categories (AASB/ASPD). Data were available for 29 events occurred in at least 10% of participants. In 21 events an age of onset was tabulated in the SSAGA, in an additional 8 events there was no specific age of onset reported. Table 2 reveals that, on average, the first symptoms from this list were temper tantrums (age 7) with the symptoms of bullying, defiance, fire setting, and cruelty to animals beginning in the 10-11 years old age range. Fights, school suspension/expulsion, running away from home, telling lies and stealing began in the 11-15 years old age range. Between ages 15 to 20 years, multiple aggressive acts were reported such as fighting, stealing, robbery, use of force, injuring people, and using a weapon occurred. From age 20-30 years of age, evidence of role failure in participants as documented by their endorsing: forging checks, failed financial responsibilities, homelessness, failed family responsibilities, as well as arrests, convicted felonies and time spent in jail. Twenty-seven of the antisocial behaviors listed in table 2 occurred significantly more often in the ASPD group as compared

to the AABS group (Wald values from the logistic regessions ranged from 10.8-276.6 for the 27 items; all p<0.001, significant ORs presented in Table 2).

The next step in the analyses was to evaluate whether the order in which the first 21 problems that had ages of onset differed across subgroups as evaluated by the Rho statistic. A comparison of the antisocial symptoms and their occurrence in time was made between: male and female participants, the three racial groups and the two diagnostic categories. As seen in Table 3, a high level of similarity was observed in the sequence of the progression of antisocial problems between men and women (Spearman's rho= .978, p< .0001). A high level of similarity was also observed between the three racial groups, using pairwise comparisons between each group, in the sequence of the progression of antisocial life problems (Spearman's rho= .925 - .956; p< 0.0001). These analyses were also conducted in order to determine if the clinical course differed based on diagnostic category. A similar clinical course was seen when those with AABS were compared to those with ASPD (Spearman's rho= 0.935; p< 0.0001).

3.2 Antisocial behavior symptoms by sex and race

Although the age and order in which the problems appeared across different racial, sex and diagnostic groups were generally similar, the data in Tables 4 and 5 explore whether there were sex and/or race/ethnic group differences in the age of onset or the proportions endorsing the 29 events evaluated in these analyses. Regarding sex differences, while not shown in the table among those who met criteria for the 2 diagnostic groups (n=3080), men reported a significantly higher average of total ASPD symptoms (10.45, ± 4.9) than women (9.09, ± 4.4) (F=58.7, p<0.001).

The data in Table 4 compares males and females regarding the prevalence and age of onset of the 29 events described in Table 2, along with the significant odds ratios (ORs) of males to females regarding the prevalence. Significant differences in prevalence were noted for 20 of the items with higher rates for males for all but 6, with females higher on: running away (item 11), failed financial and responsibilities and family responsibilities (items 19 and 21), hitting or attacking someone (item 25), as well as losing temper and blaming others for their troubles or mistakes (items 27 and 28). As also seen in table 4, women had a significantly later age of onset of 10 of the symptoms listed in Table 4 (items 3,6,8,10-12,14,16-18).

Table 5 continues the pattern of comparison's across subgroups, but now focusing on the prevalence of each of the 29 items across the three ethnic/racial groups as shown in the first three data columns. Overall statistics for race indicated significant racial/ethnic differences for 23 of the items listed in table 5. The final 3 columns are post hoc analyses where for each item with a significant overall race difference (p<0.001), each group compared to the other and the significant ORs are listed. The paired post hoc analyses between individual races indicated that the major differences reflect higher prevalence for AI and AA groups compared to EA for bullying, suspended/ expelled from school, used weapon, arrested, spent time in jail, (items 37,17,18,22; all p<0.001).

There were 9 items that differed in the age of onset between the 3 races as determined by overall ANOVA with age, school, and eonstat, used as covariates the analyses (data not

shown), and post hoc analyses. AI had an earlier age of onset of stealing, fights, and no place to live than AA (items 10,12,20; p<0.001) and an earlier age of onset of being suspended or expelled, and running away from home than EA (items 7,11; p<0.001). AA had a later age of onset of: lying, stealing, damaging property, having no place to live, and an earlier age of school suspension/expulsion, than EA (items 7, 9, 10, 16, 20; all p<.001).

Under hypothesis 2 we also predicted that American Indians and African Americans would have more school suspensions/expulsions, a behavior that is not currently part of the DSM criteria, than individuals with EA heritage, as well as have higher symptom counts. In order to further determine the potential effect of school suspension/expulsions we compared participants with a history of school suspension/expulsion to those with no school suspensions/expulsions and found that those suspended/expelled from school were: younger, attained fewer years of education, were more likely to be African American or American Indian, be male, have a lower economic status, have ASPD, have a history of being arrested and have higher overall antisocial symptom counts (all p<0.001).

4.0   Discussion

The present set of analyses are the first to use a validated research interview to evaluate the order and progression of antisocial symptoms in three racial groups, in men and women and in AASB and AABS. As predicted for our first aim, men and women were found to have a similar clinical course of the progression of antisocial behaviors although men reported more overall symptoms and at an earlier age. Euro-Americans (EA), African Americans (AA), and American Indians (AI) were also found to have a similar clinical course of the disorders, although racial differences in endorsement rates, and ages of onset of some of the individual symptoms were found to differ, with AA and AI reporting more school suspensions/expulsions and arrests than EA . The clinical course of AASB and ASPD were also found to be similar, although participants with ASPD reported more early symtoms such as bullying and cruelty to animals. It is important to note, however, that those participants with AASB did report early symptoms, but did not report *enough* symptoms to reach criteria for a diagnosis of conduct disorder and thus ASPD.

In the NESARC study, of those participants diagnosed with ASPD, 27% were women and 38% of those diagnosed with AABS were women. Similar results were found in the present study where 36% of those with AABS diagnoses and 25% of those with ASPD were women. These results demonstrate that the more severe diagnosis of ASPD has a higher male to female sex ratio than had AABS. Relatively little is known as to how males and females differ in individual symptoms associated with adult antisocial disorders, although recent studies recent studies have identified differences in comorbidity patterns and clinical presentation of CD in girls (Konrad et al., 2022). In the present study women had fewer overall numbers of symptoms, had fewer early life symptoms such as fire setting or cruelty to animals, and were also less likely to be arrested or in jail, or to be involved in fights. Women were not found to differ from men in endorsing feelings of guilt or remorse. However, women were more likely than males to run away from home and to endorse "hitting someone" and having failed financial and/or family responsibilities. One recent study observed that women committed fewer antisocial acts involving vs. not involving

police (Sher et al., 2015). That study, as well as the present study, are consistent with the finding by the Epidemiological Catchment Area (ECA) survey that showed that women with ASPD had fewer ASPD symptoms than men (Regier et al., 1990; Robins and Regier, 1991). Several studies also suggest that antisocial girls have a later onset of childhood conduct problems and are less likely to engage in aggressive acts compared to their male counterparts (Kim-Cohen et al., 2005; Silverthorn and Frick, 1999) as we also demonstrated in our study. However, our study suggests that running away from home and failed financial and family responsibility may actually occur more often in women than men, thus providing some support for a sexually dimorphic symptom profile but a similar clinical course between the sexes in ASPD symptoms.

Large national surveys have provided evidence that suggests that the prevalence of ASPD and AABS may differ depending on racial group of origin. The odds of both syndromes were demonstrated to be elevated in American Indians and lower in Hispanic and Asians, as compared to EA individuals, in the NESARC study (Compton et al., 2005; Goldstein et al., 2017). However, those earlier studies did not compare individual antisocial symptoms, their ages of onset, or their clinical course. However, as predicted in our second aim, we found that African Americans and American Indians although not more likely to endorse "playing hooky" were more likely to be suspended or expelled from school than EuroAmericans. Previous research using longitudinal studies and large administrative datasets has shown that African American students are more likely to be referred for school-based disciplinary action and were more likely to be punished for the same offence, and more likely to be suspended or expelled than EuroAmericans (Gregory, 1995; Kinsler, 2011; Riddle and Sinclair, 2019; Skiba et al., 2011; Skiba et al., 2002). While discipline disparities have been documented in a number of studies in African Americans, fewer studies have evaluated American Indians. In one large dataset from Arizona, the findings indicated that disparities in discipline referrals and in "violation-to-action" were higher in American Indians and on par with those seen in African Americans as compared to EuroAmericans (Brown, 2014). In the present study men (vs. women), those with an ASPD diagnosis (vs. AABS) and AA and AI (vs. EA) were also more likely to have been arrested, confirming studies that have shown that incarceration rates are much higher for men, African Americans and American Indians than Euro-Americans (see (Minton and Golinelli, 2014; Vogel and Porter, 2016)). The current analyses were not able to determine whether differences in the detection and/or occurence of certain antisocial symptoms such as arrests and school suspensions between racial groups are a result of racial bias, and whether those differences may ultimately lead to unwarranted diagnoses based on race. In one lone study it was found that psychiatrists were more likely to diagnose ASPD in Europeans than African Caribbean patients in the U.K. (see Mikton and Grounds, 2007), obviously more studies need to be conducted to determine if racial bias is present in U.S. diagnoses of AASB and ASPD. However, the current analyses does suggest that interventions to reduce school suspensions/expulsions particularly in AA and AI is warranted and could potentially lead to fewer antisocial behaviors over time.

In this sample, the most prevalent diagnostic category was AABS that included 1932 (27% of the full sample) cases, more cases than ASPD (n=1148, 16%). These data further support the findings from the NESARC that have demonstrated that AABS is a highly prevalent

disorder perhaps twice as prevalent as ASPD (Compton et al., 2005; Goldstein et al., 2017). In the present study the two diagnostic groups, ASPD and AABS, were not found to differ from each other in their clinical course. These data suggest that antisocial behaviors are a continuum that follow a distinct clinical course and that the distinctions between the diagnoses primarily involve documenting that enough symptoms occurred under the age of 15. These data are also consistent with previous large epidemiological studies demonstrating that ASPD and AABS may have similar sociodemographic and psychiatric correlates and disability (Goldstein et al., 2017; Langbehn and Cadoret, 2001; Marmorstein, 2006; Tweed et al., 1994). Taken together these studies illustrate the public health significance of these disorders and suggest that further nosological research may determine that adult onset disorder warrants a clinical category in the DSM.

It has been suggested, by some authors, that measurements of maladaptive personality traits such as: superficial charm, egocentricity, guiltlessness, callousness, dishonesty, egocentricity, termed "psychopathy", and more recently labeled "dark triads" (see Kowalski et al., 2021) (see Blonigen et al., 2006; Cleckley, 1951; DeLisi, 2016; Lilienfeld, 1998; Lynam and Miller, 2015) may be more important and less biased than using the presence of criminal behaviors in defining antisocial syndromes. It has been further suggested that one of the early key signs of a psychopathy that may underlie antisocial behaviors is a lack of conscience and feelings for others termed callous-unemotional (CU) traits (see Frick et al., 2014; Waller and Hyde, 2018). While the analyses presented here did not measure the construct of CU directly, participants were queried as to whether they felt guilt and/or remorse for their behaviors. There were no differences found on this measure based on sex or race. However, those participants with AASB were less likely to endorse feelings of guilt and remorse than those with ASPD although the level of significance was not (OR=1.53) as as discriminatory for that item as the presence of early antisocial behaviors such as bullying (OR=7.56) or cruelty to animals (OR=6.38).

While measures of psychopathy may be less "biased", those measures are more difficult to document with respect to their the age of onset or how those traits may change over time. Understanding differences in the age and prevalence of documentable antisocial behaviors may potentially help to refine and guide diagnosis and treatment strategies that could lead to early interventions (see Brazil et al., 2018; Raine et al., 2021). Recent investigations have pointed to potential new modalities to treat patients with antisocial behaviors, particularly in children and adolescents, such as Multisystemic Therapy and Functional Family Therapy (see Bjornebekk and Morkrid Thogersen, 2021 for review) and omega-3 supplementation (Raine et al., 2016; Raine et al., 2021). While there is no direct evidence that any one pharmacotherapy can target antisocial symptoms in adults there is some support for the effectiveness of medication to target impulsive and/or aggressive behaviors (Brazil et al., 2018). Further studies of pharmacotherapy or psychotherapy for distinct symptoms of early antisocial behaviors, such as bullying and/or cruelty to animals, may be a productive approach for the future.

4.1 Strengths and Limitations

The strenghs of our study are the relatively large sample size and the completeness of the data describing individual antisocial behaviors and their occurrence over time. To our knowledge it is one of the first studies to describe the clinical course of ASPD and AASB in both men and women and in three racial groups. One limitation of the studies is that they were conducted on a select sample of European Americans, African Americans and American Indians and do not represent a random sample therefore prevalence rates of the disorders may not accurately reflect national averages. The data are from one group of American Indians and are not necessarily representative of all American Indians, or even all individuals within these populations. The study also gathered data on the course of antisocial behaviors using retrospective methods and may be subject to historical cohort effects that may not be in effect in future studies. Replications of our findings using longitudinal methods will be necessary to validate them and thus we cannot make any assumptions about their generalization to other samples. Never the less this report represents an important first step in understanding the clinical course of antisocial behaviors in understudied racial groups.

5. Conclusion

In these select populations of Euro-American, African-American, and American Indians, the clinical course of antisocial behaviors does not differ by racial group, diagnostic category, or sex. However, the prevalence of individual symptom counts may differ by sex, race and diagnosis, most notably school suspensions/expulsions and arrests. Since school expulsions appear to occur more frequently in African American and Native Americans than EuroAmericans and school expulsions have been shown to be associated with higher rates of incarceration, this suggests further study of the possible role of racial and sex in the consequences associated with antisocial behavioral syndromes is warranted, and potential interventions for the prevention of school expulsions in high-risk racial groups should be considered.

Role of the funding source

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Table 1.

Demographics of the Antisocial Personality groups

	Entire Sample		Adult Antisocial Behavioral Syndrome		Anti-Social Personality Disorder		
	N=3080		N=1932		N=1148		
	N	%	N	%	N	%	
African American	986	32	636	33	350	30	ns
European American	1754	57	1074	56	680	59	ns
American Indian	340	11	222	11	118	11	ns
Male	1974	64	1139	59	835	73	*
Income < $20,000/yr	1160	38	756	39	404	35	ns
	Mean	SD	Mean	SD	Mean	SD	
Age	36.3	11.3	37.1	11.4	34.8	10.8	*
Education	12.2	2.2	12.4	2.2	11.9	2.4	*

*
p<0.001 chi-square analysis

Table 2.

Sequence of antisocial behaviors within each antisocial personality group. Odds Ratio of significant differences in occurrence across antisocial personality group.

Item #	Antisocial Behavior	AABS N=1932	ASPD N=1148	OR
		% Occurrence	% Occurrence	AABS [a] Vs ASPD
1	Temper tantrums	16.5	28.9	**1.90**
2	Often a bully	4.3	26.7	**7.56**
3	Often defiant; home, school	30.6	57.2	**2.83**
4	Cruelty to animals	4.7	23.6	**6.38**
5	Deliberately set fires	10.7	26.4	**2.90**
6	Start fights	22.3	53.7	**3.85**
7	Suspended /expelled from school	50.9	68.4	**1.88**
8	Played hooky	70.5	86.4	**2.49**
9	Tell lots of lies	49.5	74.9	**2.97**
10	Steal from stores or others	41.9	73.4	**3.95**
11	Run away from home	21.3	42.0	**2.53**
12	Get into fights	61.7	71.6	**1.49**
13	Steal from family	24.0	45.4	**2.65**
14	Break into car or house	15.4	43.5	**4.07**
15	Enjoyed outsmarting people	12.3	22.0	**1.91**
16	Damage property on purpose	25.8	51.9	**3.00**
17	Used weapon	14.1	31.1	**2.57**
18	Ever arrested	50.4	62.2	**1.53**
19	Failed financial responsibilities	38.4	40.4	
20	No regular place to live	21.7	27.4	**1.33**
21	Failed Family Responsibilities	17.9	19.3	
22	Convicted felony or spent time in jail	18.8	26.4	**1.46**
23	Done anything illegal	51.2	67.5	**1.90**
24	10 or more sex partners in a year	22.7	28.3	**1.38**
25	Often hit or attacked anyone	13.9	24.4	**1.90**
26	Ignored other's feelings to do what you want	36.1	46.5	**1.51**
27	Frequently lose temper, angry or resentful	38.4	51.7	**1.67**
28	Blame others for your troubles or mistakes	22.5	33.8	**1.76**
29	No remorse or guilt	18.0	26.0	**1.53**

Items 19, 20, 21, 23, and 25 occurring after age 15

Items 1, 3, 7, 24, 26, 27, and 28 are not DSM Criteria

[a] p<0.001 between the diagnostic groups using logistic regression with age and education as covariates

AABS, Adult Antisocial Behavioral Syndrome; ASPD, Antisocial Personality Disorder.

Table 3.

Spearman correlations of mean age onset of 21 antisocial symptoms by race, gender and antisocial diagnostic group.

	Spearman's rho	Significance
Adult Antisocial Behavioral Syndrome vs Antisocial Personality Disorder	0.935	p<0.001
Male vs Female	0.978	p<0.001
African vs European American	0.956	p<0.001
African American vs American Indian	0.925	p<0.001
European American vs American Indian	0.925	p<0.001

Table 4.

Mean age onset and percent of participants reporting each antisocial behavior. Odds Ratio of differences in occurrence across sexes.

Item #	Antisocial Behavior	Males (N=1974)			Females (N=1106)			ORs[b]
		Mean	SD	%	Mean	SD	%	Male Vs Female
1	Temper tantrums	7.0	4.9	19.7	6.4	4.9	23.8	
2	Often a bully	10.2	3.6	12.4	9.8	3.6	13.1	
3	Often defiant; home, school	10.5[a]	3.6	40.5	11.6	3.6	40.7	
4	Cruelty to animals	12.2	5.6	16.2	11.4	5.7	3.7	**5.08**
5	Deliberately set fires	11.8	5.8	21.7	14.1	5.9	7.3	**3.74**
6	Start fights	12.6[a]	4.8	39.0	14.3	4.9	25.0	**2.04**
7	Suspended/expelled from school	13.5	2.6	61.8	13.8	2.6	49.6	**1.90**
8	Played hooky	13.6[a]	2.5	77.5	14.0	2.5	74.5	
9	Tell lots of lies	13.6	6.3	59.2	14.3	6.3	58.5	
10	Steal from stores or others	13.5[a]	5.7	55.6	14.7	5.8	50.2	**1.29**
11	Run away from home	13.7[a]	2.4	23.9	14.5	2.4	38.1	**0.53**
12	Get into fights	14.7[a]	4.5	71.4	17.0	4.5	54.7	**2.13**
13	Steal from family	15.4	7.4	33.6	17.0	7.4	29.0	
14	Break into car or house	16.3[a]	5.4	33.5	18.2	5.4	12.3	**3.83**
15	Enjoyed outsmarting people	17.1	6.3	17.8	18.5	6.3	12.5	**1.57**
16	Damage property on purpose	16.9[a]	6.9	41.7	20.5	6.9	24.6	**2.38**
17	Used weapon	18.5[a]	7	22.5	20.9	7	16.7	**1.53**
18	Ever arrested	20.9[a]	7.1	61.4	23.4	7.1	42.9	**2.36**
19	Failed financial responsibilities	23.3	6.6	35.5	24.6	6.6	45.6	**0.66**
20	No regular place to live	24.6	8.1	24.2	24.4	8.1	23.1	
21	Failed Family Responsibilities	27.0	6.2	16.8	27.8	6.2	21.2	**0.70**
22	Convicted felony or spent time in jail			26.6			12.8	**2.66**
23	Done anything illegal			62.1			48.7	**1.80**
24	10 or more sex partners in a year			29.3			16.6	**1.99**
25	Often hit or attacked anyone			13.9			24.8	**0.50**
26	Ignored other's feelings to do what you want			40.6			38.9	
27	Frequently lose temper, angry or resentful			39.8			49.6	**0.69**
28	Blame others for your troubles or mistakes			23.8			31.8	**0.68**
29	No remorse or guilt			22.4			18.4	

Items 19, 20, 21, 23, and 25 occurring after age 15

[a]Significant difference in age onset by sex (p<0.001 ANCOVA covaried for age and economic status)

[b]Significant difference in occurrence by sex (p<0.001 logistic regression covaried for age and economic status)

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Table 5.

Percent of participants reporting each antisocial behavior across the three racial/ethnic groups. Odds Ratio of significant differences in occurrence across race.

		% Occurrence			Odds ratio		
		EA	AA	AI	AA[a] vs EA	AA[b] vs AI	AI[c] vs EA
Item #	Antisocial Behavior	N=1754	N=986	N=340			
1	Temper tantrums	20.5	21.2	24.1			
2	Often a bully	8.7	16.1	22.9	**1.87**		**2.42**
3	Often defiant; home, school	41.6	35.7	49.4	**0.70**		
4	Cruelty to animals	11.1	13.3	10.6			
5	Deliberately set fires	18.0	12.2	21.8	**0.65**		
6	Start fights	30.8	34.3	49.4		**0.60**	**1.87**
7	Suspended/expelled from school	49.3	64.8	77.9	**1.51**		**2.40**
8	Played hooky	72.6	81.4	81.8			
9	Tell lots of lies	58.8	67.0	36.5	**1.39**	**3.89**	**0.35**
10	Steal from stores or others	54.7	48.3	64.1		**0.53**	**1.58**
11	Run away from home	29.5	23.5	42.1	**0.61**	**0.47**	
12	Get into fights	60.2	69.3	81.2		**0.56**	**2.51**
13	Steal from family	32.4	31.3	31.2			
14	Break into car or house	27.9	19.1	35.3	**0.57**	**0.47**	
15	Enjoyed outsmarting people	10.4	18.3	37.4	**1.93**	**0.39**	**5.16**
16	Damage property on purpose	37.3	27.4	50.0	**0.65**	**0.44**	
17	Used weapon	13.2	32.2	23.8	**2.82**		**1.70**
18	Ever arrested	47.4	64.4	64.7	**1.64**		**1.58**
19	Failed financial responsibilities	35.9	44.9	39.1	**1.33**		
20	No regular place to live	22.5	22.6	34.4		**0.52**	**1.58**
21	Failed Family Responsibilities	12.9	27.6	20.3	**2.18**		
22	Convicted felony or spent time in jail	13.1	29.7	42.6	**2.24**		**4.12**
23	Done anything illegal	52.9	63.8	61.2	**1.45**		
24	10 or more sex partners in a year	23.0	30.7	16.8	**1.42**	**2.14**	
25	Often hit or attacked anyone	13.8	20.4	30.9		**0.56**	**2.35**
26	Ignored other's feelings to do what you want	37.3	44.9	39.7	**1.37**		
27	Frequently lose temper, angry or resentful	42.4	43.9	46.8			
28	Blame others for your troubles or mistakes	27.0	28.8	19.1		**1.68**	**0.56**
29	No remorse or guilt	20.0	23.3	19.4			

Items 19, 20, 21, 23, and 25 occurring after age 15

[a] Significant difference between AA and EA (p<0.001;logistic regression covaried for education and economic status)

[b] Significant difference between AA and AI (p<0.001;logistic regression covaried for age, education)

[c] Significant difference between AI and EA (p<0.001;logistic regression covaried for age, education and economic status)

EA, European American; AA, African American; AI, American Indian