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Comorbidity of Social Anxiety Disorder and Antisocial Personality Disorder in the National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

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Abstract

Social anxiety disorder (SAD) and antisocial personality disorder (ASPD) are not often thought of as being comorbid. However, recent research suggests the existence of a SAD subtype with characteristics atypical of SAD but common to ASPD. Thus, we explored two competing hypotheses: 1) SAD and ASPD represent opposite ends of a single dimension, or 2) SAD and ASPD exist on two separate dimensions that may be positively correlated. Data were obtained from the National Epidemiological Survey on Alcohol and Related Conditions. SAD-ASPD was related to greater impairment and psychiatric comorbidity than either disorder alone. The SAD-ASPD group was also more likely to seek treatment for their SAD symptoms and to drink before/during antisocial acts than the SAD only group. The presence of SAD for individuals with ASPD (and vice versa) does not appear to provide any "protective benefits." SAD and ASPD appear to be two separate but correlated disorders.

Keywords

Social phobia; Social anxiety disorder; Antisocial personality disorder; Comorbidity

1. Introduction

Social anxiety and antisocial behaviors are not typically conceptualized as co-occurring. Individuals with social anxiety are often characterized as shy, submissive, behaviorally

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inhibited, and risk-averse (Gilbert, 2001). However, recent research has shown that some socially anxious individuals exhibit characteristics quite different than the prototypical person with social anxiety disorder (SAD). For example, Kashdan, McKnight, Richey, and Hofmann (2009) demonstrated that some individuals with SAD exhibit a number of risk-prone behaviors, including aggression, sexual impulsivity, and problematic substance use. This atypical risk-prone pattern was evident in 21% of persons with SAD in their large community sample.

Although previous research has shown that anxiety disorders, especially SAD and posttraumatic stress disorder (PTSD), are associated with antisocial personality disorder (ASPD) and engagement in antisocial behaviors in general (Goodwin & Hamilton, 2003; Sareen, Stein, Cox, & Hassard, 2004), little is known about the co-occurrence of SAD and ASPD. However, examination of individuals with comorbid SAD-ASPD is important for several reasons. First, it provides an opportunity to increase our understanding of the prevalence and demographic characteristics of this understudied group. Second, it can enhance our knowledge of the clinical features of this comorbid group, including characterization of which ASPD criteria, antisocial behaviors, and feared social situations they tend to endorse. This would be valuable for increasing clinical recognition of such comorbidity. Third, it may help guide the development of interventions that specifically focus on SAD and ASPD. Conventional therapies directed at SAD or ASPD may need modification to be effective for this comorbid group.

This work also has theoretical implications for conceptualizing dimensions of psychopathology. Two competing hypotheses may be useful for conceptualizing the co-occurrence of SAD and ASPD, its prevalence, and its impact: 1) SAD and ASPD may represent opposite ends of a single dimension. Consistent with this view, Hofmann, Korte, and Suvak (2009) found that social anxiety and psychopathic attributes were negatively associated and suggested that these traits may be on opposite ends of a spectrum related to adherence to social norms and concern for other people's approval. If so, symptoms/behaviors associated with each of these disorders would be negatively correlated. Accordingly, individuals with SAD-ASPD would be relatively rare, and the distress/interference they experience might be milder than that of individuals with either SAD or ASPD alone. 2) SAD and ASPD exist on two separate dimensions that may be positively correlated. According to this hypothesis, the presence of either SAD or ASPD should increase the likelihood of having the other diagnosis and comorbid SAD-ASPD would be associated with greater impairment/severity.

This study sought to address several specific questions. For instance, do individuals with SAD-ASPD endorse different ASPD diagnostic criteria than individuals with ASPD alone? If SAD and ASPD exist on a single dimension, individuals with SAD-ASPD may endorse ASPD criteria that are less confrontational (e.g., consistent irresponsibility) rather than criteria that are associated with direct social interaction (e.g., physical aggressiveness). However, since individuals with the atypical, risk-prone subtype of SAD exhibited moderate to high levels of anger and aggression (Kashdan et al., 2009; Kashdan & McKnight, 2010), it is plausible that individuals with SAD-ASPD may be more likely to endorse ASPD criteria for physical aggressiveness than individuals with ASPD alone (supporting the multi-dimensional conceptualization). Similar arguments can be made about the specific types of antisocial behaviors in which individuals with SAD-ASPD tend to engage compared to individuals with ASPD alone.

In line with the multi-dimensional hypothesis, previous research has found that anxiety disorders comorbid with ASPD are associated with additional comorbid disorders, greater levels of distress and dysfunction, poorer quality of life, and a higher frequency of suicidal

ideation than either diagnosis alone (Goodwin & Hamilton, 2003; Sareen et al., 2004). However, few studies have investigated the specific impact of co-occurring SAD-ASPD on impairment across a wider range of social, occupational, and emotional/psychological outcomes. Given the results of these previous studies, SAD-ASPD individuals appear more likely to experience greater impairment across a variety of domains than individuals with SAD or ASPD alone. However, one study found higher levels of impairment in conduct-disordered boys without an anxiety disorder than boys with an anxiety disorder (Walker et al., 1991).

Do individuals with SAD-ASPD differ in their treatment-seeking behavior for SAD compared to those with SAD alone? If individuals with SAD-ASPD tend to experience greater impairment than individuals with SAD or ASPD alone, they may be more likely to seek treatment for their SAD symptoms as a result of their heightened levels of distress and interference. However, ASPD has been shown to negatively affect treatment seeking behavior (Helzer & Pryzbeck, 1988). Therefore, individuals with SAD-ASPD may be less likely than individuals with SAD alone to seek treatment for their social anxiety.

Are SAD-ASPD are more likely to drink heavily before/during their engagement in antisocial behaviors than individuals with ASPD alone? Sareen et al. (2004) demonstrated that there may be an additive effect of anxiety and ASPD on the odds of lifetime comorbidity for alcohol use disorder. Because drinking is sometimes used as a coping strategy and/or method of self-medication among individuals with SAD before, during, and after anxiety-provoking events (Abrams, Kushner, Medina, & Voight, 2001; Abrams, Kushner, Medina, & Voight, 2002; Buckner, Heimberg, Ecker, & Vinci, 2013; de Boer, Schippers, & Van der Staak. 1993; Schneier et al. 2010), they may be more likely to use alcohol before/during antisocial acts since these particular types of behaviors often violate social norms and therefore should increase the likelihood that they will produce anxiety among individuals with SAD.

The present study sought to fill these gaps in the literature using data from the National Institute on Alcohol Abuse and Alcoholism's (NIAAA) National Epidemiological Survey on Alcohol and Related Conditions (NESARC), which consists of a large, representative sample of the U.S. population. First, we examined whether individuals with SAD-ASPD would differ from individuals with ASPD or SAD alone on the type and mean number of ASPD criteria and antisocial behaviors endorsed. Second, we examined whether individuals with SAD-ASPD would report greater impairment than individuals with SAD or ASPD alone. We examined a wide range of indicators, including measures of emotional/psychological well-being, psychiatric comorbidity, number of feared social situations, and various single-item questions used to assess social/interpersonal/occupational functioning and quality of life. Third, we examined whether individuals with SAD-ASPD would be less likely to seek treatment for their SAD symptoms than individuals with SAD alone. Finally, we examined whether individuals with SAD-ASPD would be more likely to drink heavily before and during their engagement in antisocial behaviors than individuals with ASPD or SAD alone.

2. Method

2.1. Sample

The 2001–2002 NESARC is a survey of a representative sample of the United States adult population, conducted by the NIAAA (Grant, Dawson, et al., 2003; Grant et al., 2005; Grant, Hasin, Chou, Stinson, & Dawson, 2004). It targeted civilians 18 or older living in households or group living quarters. Face-to-face interviews were conducted with 43,093 respondents. The survey response rate was 81%. Blacks, Hispanics, and young adults (age

18–24 years) were over-sampled, with data adjusted for over-sampling, household- and person-level non-response.

The weighted data were then adjusted to represent the U.S. civilian population based on the 2000 Census. All potential NESARC respondents were informed in writing about the nature of the survey, the statistical uses of the survey data, the voluntary aspect of their participation and the Federal laws that rigorously provide for the strict confidentiality of identifiable survey information. Those respondents consenting to participate were interviewed. The research protocol was approved by the U.S. Census Bureau and the U.S. Office of Management and Budget.

We examined 1773 respondents with SAD and no ASPD, 1212 with ASPD and no SAD, and 210 with both SAD and ASPD (total $N = 3195$).

2.2. Measures

Demographic characteristics—Age, gender, race-ethnicity, education, marital status, employment status, and individual income were examined.

DSM-IV diagnostic interview—The NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule, DSM-IV Version (AUDADIS-IV) was used to assess lifetime DSM-IV diagnoses (Grant, Dawson, et al., 2003). The AUDADIS-IV is a structured diagnostic interview designed for administration by professional interviewers who are not clinicians.

Social anxiety disorder—Diagnosis of SAD required a marked or persistent fear of one or more social or performance situations (operationalized here as at least 1 of 14 social interaction or performance situations, including an “other situation” category) in which embarrassment or humiliation may occur. The fear had to be recognized as excessive or unreasonable. In addition, exposure to the situation must have almost invariably provoked anxiety, and the feared social situations must have been avoided or endured with intense anxiety. All diagnoses of SAD required that the DSM-IV clinical significance criterion be met (i.e., symptoms of the disorder must have caused clinically significant distress or impairment in social, occupational, or other areas of functioning). Unlike the diagnoses provided by other instruments used in epidemiologic surveys (Alonso et al., 2004; Kessler et al., 1998; Wittchen, Essau, Zerssen, Krieg, & Zaudig, 1992), AUDADIS-IV diagnoses of SAD excluded persons with SAD symptoms that were substance-induced or due to medical conditions (Grant, Hasin, Chou, et al., 2004).

Antisocial personality disorder—To receive a lifetime diagnosis of antisocial personality disorder, the respondent had to endorse symptom items that correspond to at least three of the DSM-IV criteria. At least one of the positive symptom items must have caused significant social or occupational dysfunction. Over thirty symptom items were used to assess the presence of antisocial personality disorder, including the existence of conduct disorder prior to the age of 15 (Grant, Hasin, Stinson, et al., 2004).

Other psychiatric disorders—As described in detail elsewhere (Grant et al., 2005; Grant, Hasin, Chou, et al., 2004), the AUDADIS-IV also assessed three other DSM-IV anxiety disorders (panic disorder, specific phobia, and GAD) and four mood disorders (major depressive disorder, bipolar I disorder, bipolar II disorder, and dysthymia). These diagnoses required that the clinical significance criterion be met and excluded substance-induced episodes or those due to general medical conditions. The AUDADIS-IV questions operationalize DSM-IV criteria for alcohol and drug-specific abuse and dependence for 10

drug classes. Consistent with DSM-IV, a lifetime AUDADIS-IV diagnosis of alcohol abuse required that at least 1 of the 4 criteria for abuse be met prior to interview. The AUDADIS-IV lifetime alcohol dependence diagnosis required that at least 3 of the 7 DSM-IV criteria for dependence be met prior to interview. Drug abuse and dependence and nicotine dependence used similar algorithms (Grant, Hasin, Chou, et al., 2004). The AUDADIS-IV assessments of personality disorders have been described previously (Grant, Chou, et al., 2008; Grant, Hasin, Stinson, et al. 2004). Additional personality disorders that were assessed included avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and histrionic. A diagnosis of psychotic disorder was assigned if respondents answered affirmatively when asked if they had ever been told by a doctor or other health professional that they had schizophrenia or a psychotic disorder.

As reported elsewhere, test–retest reliability of the AUDADIS diagnosis of SAD was fair (k = 0.42–0.46) (Grant et al., 2005; Grant, Moore, et al., 2003). Reliability ($k > 0.74$) and validity were good to excellent for substance use disorders (Grant, Harford, Dawson, Chou, & Pickering, 1995; Grant, Hasin, Chou, et al., 2004; Grant, Moore, Shepard, & Kaplan, 2003; Vrasti et al., 1997). Additionally, reliability was fair to good for mood and other anxiety disorders (k = 0.40–0.60) and personality disorders (k = 0.40–0.67) (Grant, Hasin, Stinson, et al., 2004; Grant, Moore, et al., 2003).

Impairment—The Short Form-12v2 (SF-12) (Ware, Kosinski, & Keller, 1996), a reliable and valid measure commonly employed in population surveys, was used to assess health-related quality of life. Three subscales on the SF-12 were used: social functioning, role emotional, and mental health. Higher scores on the SF-12 are indicative of better health-related quality of life. In addition to the SF-12, perceived health status (rated on a 5-point scale from “poor” to “excellent”), problems with work or regular daily activities due to an emotional problem, and feeling downhearted and depressed (each rated over the past 4 weeks on a 5-point scale from “all of the time” to “none of the time”) were assessed. Positive endorsement of the following list of experiences over the past 12 months was further used to assess impairment: being fired or laid off, being unemployed and looking for a job, having trouble with a boss or co-worker, changing jobs or job responsibilities/hours, being separated or divorced or breaking off a relationship, and having serious problems with a neighbor/friend/relative.

Treatment-seeking—Respondents were classified as having sought treatment for their SAD symptoms if they responded affirmatively to ever going to a counselor, therapist, doctor, psychologist, or any similar person, to get help for their fear or avoidance of social situations.

2.3. Statistical Analyses

Weighted percentages and means were computed to derive prevalence, demographic correlates, and clinical correlates of SAD and/or ASPD. Preliminary odds ratios (ORs) indicated associations with demographic variables (i.e., sex, age, education, and individual income). After adjusting for these variables, logistic regression analyses yielded ORs measuring associations between lifetime SAD and/or ASPD and comorbid psychiatric disorders, social/work impairment characteristics, treatment seeking characteristics, the presence of heavy drinking before/during antisocial behaviors, ASPD diagnostic criteria, and specific antisocial behaviors and feared social situations endorsed. F-tests adjusted for demographic variables (sex, age, education, and income) were used to compare means of the SAD-ASPD group versus each single disorder group on the number of feared social situations endorsed, the number of antisocial behaviors endorsed, the number of ASPD criteria endorsed, and scores on the SF-12 subscales. Standard errors and 95% confidence

intervals for all analyses were estimated using SUDAAN statistical software (Research Triangle Institute, 2004) to account for design effects of the NESARC.

3. Results

3.1. Prevalence

A total of 210 of the 3195 study participants met criteria for both SAD and ASPD (6.5%). SAD and ASPD were comorbid in 10.6% of respondents with SAD and 14.8% of respondents with ASPD.

3.2. Demographic Characteristics

Table 1 presents the demographic characteristics for the SAD-ASPD, SAD only, and ASPD only groups. Among those with SAD, individuals with comorbid ASPD were more likely to be male and have less than a high school education and were less likely to be over the age of 44 and earn between $35,000 and $69,000.

Among those with ASPD, individuals with comorbid SAD were less likely to be male and earn between $35,000 and $69,000 and were more likely to have less than a high school education.

3.3. ASPD Criteria Endorsed

Table 2 presents the percentage endorsement of ASPD criteria by the SAD-ASPD, SAD only, and ASPD only groups, adjusted for sex, age, education, and income. There were no significant differences between the SAD-ASPD group and the ASPD only group on percentage endorsement of any criterion. Similarly, there was no significant difference between the comorbid group and the ASPD only group on the average number of ASPD criteria endorsed (Table 3). Not surprisingly, the SAD-ASPD group and the SAD only group differed on percentage endorsement of every ASPD criterion (Table 2) as well as the average number of ASPD criteria endorsed (Table 3).

3.4. Antisocial Behaviors Endorsed

Table 2 also presents the percentage of endorsement of specific antisocial behaviors by the SAD-ASPD, SAD only, and ASPD only groups, adjusted for sex, age, education, and income. Individuals with SAD-ASPD were more likely to hurt or be cruel to an animal/pet on purpose than those with ASPD alone. There were no other significant differences between the comorbid group and the ASPD only group. Individuals with SAD-ASPD did not endorse engaging in fewer antisocial behaviors (Table 3). As expected, there were significant differences between the SAD-ASPD group and the SAD only group on percentage endorsement of each of the specific antisocial behaviors, except for “Force someone to have sex with you,” which had a very low level of endorsement for both groups (Table 2). There was also a significant difference between these groups on the average number of antisocial behaviors endorsed (Table 3).

3.5. Functional Impairment and Comorbidity

Among those with SAD, comorbid ASPD was related to interference with work/daily activities due to an emotional problem “some of the time” or “all of the time,” and feeling downhearted or depressed (Table 3). Additionally, individuals with SAD-ASPD were more likely to endorse the following experiences over the past 12 months than those with SAD alone: having trouble with a boss or coworker, changing jobs or job responsibilities/hours, being separated or divorced or breaking off a relationship, and having a serious problem with a neighbor, friend, or relative (Table 3).

Among those with ASPD, comorbid SAD was related to a perceived health status of "good," interference with work/daily activities due to an emotional problem "some of the time," "most of the time," or "all of the time," and feeling downhearted or depressed. Individuals with SAD-ASPD were also more likely to endorse trouble with a boss or coworker over the past 12 months than those with ASPD alone (Table 3).

For each of the SF-12 subscales (i.e., social functioning, role emotional, and mental health), individuals with SAD-ASPD had lower scores compared to those with either SAD or ASPD alone (Table 3).

Table 4 presents the percentage of the SAD-ASPD, SAD only, and ASPD only groups who met criteria for other psychiatric disorders, adjusted for sex, age, education, and income. Among those with SAD, comorbid ASPD was related to having any other psychiatric disorder, having any Axis I or other Axis II disorders, substance use disorders (although not alcohol abuse), mood disorders (although not major depressive disorder and sdysthymia), other anxiety disorders, and psychotic disorder. Among those with ASPD, comorbid SAD was related to any psychiatric disorder, having any other Axis I or Axis II disorders, substance use disorders (although not alcohol abuse and drug abuse), mood disorders (although not major depressive disorder and dysthymia), other anxiety disorders, and psychotic disorder.

Table 5 presents the percentage of endorsement of significant fear in specific social situations for the SAD-ASPD, SAD only, and ASPD only groups, adjusted for sex, age, education, and income. Individuals with SAD-ASPD were more likely to experience significant fear in small groups than those with SAD alone. There were no significant differences between the SAD-ASPD group and the SAD only group for any other social situation or the average number of feared social situations endorsed (Table 3). Individuals in the SAD-ASPD group were more likely to endorse significant fear in all of the listed social situations and a greater number of feared situations than the ASPD only group. However, the ASPD only group reported that they feared an average of four social situations.

3.6. SAD Treatment Seeking

Individuals with SAD-ASPD were *more* likely to seek treatment for their SAD symptoms compared to those with SAD only (Table 3).

3.7. Heavy Drinking Before/During Antisocial Behaviors

Individuals with SAD-ASPD were not more (or less) likely to drink heavily before/during any or all of their antisocial behaviors than those with ASPD only (Table 3). However, the SAD-ASPD group was more likely to drink heavily before/during engagement in antisocial behaviors than the SAD only group.

4. Discussion

This epidemiological study used a national representative sample of U.S. adults to examine potential areas of difference between individuals with comorbid SAD and ASPD and those with SAD or ASPD alone. These groups were compared on demographic characteristics, ASPD criteria, antisocial behaviors, indices of functional impairment, comorbidity with other psychiatric disorders, SAD treatment seeking, and heavy drinking before/during antisocial behaviors.

The primary findings include that: (1) comorbid SAD-ASPD was associated with greater impairment, as indicated by perceived health status, education level, individual income, and various other indicators of social and emotional functioning, when compared to either SAD

or ASPD alone; (2) comorbid SAD-ASPD was associated with greater psychiatric comorbidity; (3) the SAD-ASPD group was more likely to seek treatment for their SAD symptoms than the SAD only group; and (4) the SAD-ASPD group was more likely to drink heavily before/during their engagement in antisocial behaviors than the SAD only group.

This study provides support for a multi-dimensional conceptualization of SAD-ASPD. That is, SAD and ASPD appear to be two separate but correlated disorders. Neither SAD nor ASPD appeared to provide a protective benefit for the comorbid group; rather, the co-occurrence of these two disorders contributed to greater impairment and symptom severity than either disorder alone. This overall finding has both practical and theoretical implications. In regards to treatment, individuals with comorbid SAD and ASPD will likely require an approach that addresses the features and symptoms specific to each disorder to achieve the greatest effectiveness. Perhaps more importantly, this study may adjust the perception of what an SAD-ASPD individual "looks like" to various mental health professionals. It no longer seems appropriate for mental health professionals to rule out the presence of ASPD when they are treating individuals who exhibit features of SAD, and vice versa. Behavioral inhibition, which is often considered a corner stone of an SAD diagnosis, may be a characteristic that typifies some but not all persons with SAD, and it is not necessarily suggestive of an individual's behavior across all circumstances. Theoretically, this study challenges the notion that both of these disorders can be conceptualized under the umbrella of a single dimension (e.g., behavioral inhibition versus disinhibition). Future research on the comorbidity of SAD and ASPD would benefit from a multi-faceted view that considers the potential for a wider range of clinical presentations across various contexts.

A closer look at some of the specific findings from the current study sheds additional light on the characteristics of SAD-ASPD individuals. Endorsement of significant fear in social situations for the SAD and ASPD only groups was compared to the SAD-ASPD group. Not surprisingly, the SAD-ASPD group was more likely to endorse significant fear of all the specific social situations than the ASPD only group. In contrast, there were few differences between individuals with SAD-ASPD and SAD only. However, individuals with SAD-ASPD had a higher percentage of endorsement of fear of being in small groups than individuals with SAD only. Given that individuals with ASPD tend to have increased difficulties in their interpersonal relationships, it may be plausible that being in a small group is a particularly challenging social situation for these individuals since it involves interacting with several people in a relatively intimate setting and often requires a series of successful exchanges (unlike speaking in public or at a meeting, activities in which a person can express ideas without much concern for cooperation or constructive exchange with others). Future work will need to examine what aspects of being in a small group give individuals with SAD-ASPD greater difficulty. Particularly interesting was that individuals with ASPD endorsed significant fear in an average of four social situations, a relatively high number considering that these individuals are often described as caring very little about social norms and/or the thoughts and feelings of others.

Although ASPD has been shown to negatively impact treatment-seeking behavior (Helzer & Pryzbeck, 1988), individuals with comorbid SAD and ASPD were more likely to seek treatment for SAD than those with SAD alone. Perhaps the heightened level of impairment demonstrated by individuals with SAD-ASPD outweighs the negative personality characteristics that may limit ASPD individuals' pursuit of treatment. It may also be that individuals with ASPD often do not view the difficulties that they experience as problems of clinical significance but have an easier time seeking treatment for psychological disorders that are typically accompanied by distressing physiological symptoms, such as anxiety or mood disorders.

No differences were found between the SAD-ASPD and ASPD only groups for the average number of ASPD criteria or antisocial behaviors endorsed. Similarly, individuals with SAD-ASPD were not less likely to endorse certain types of ASPD criteria and antisocial behaviors compared to individuals with ASPD alone (e.g., criteria/behaviors related to aggressiveness, physical violence, more direct form of confrontation, etc.). Only one antisocial behavior, hurting or being cruel to an animal/pet on purpose, revealed a difference in endorsement between the two groups, with SAD-ASPD individuals being more likely to engage in this behavior compared to those with ASPD alone. Although there were large differences in the ASPD criteria and antisocial behaviors between the SAD-ASPD group and the SAD only group, SAD does not appear to diminish the risk for these behaviors, although they clearly contrast with the classic presentation of SAD, i.e., a tendency to be behaviorally inhibited. However, this study does provide support for recent research that there may be a subset of individuals who exhibit clinical distressing social anxiety who also engage in a range of behaviors that are risk-prone and/or impulsive (Kashdan & McKnight, 2010; Kashdan et al., 2009). In line with a multi-dimensional conceptualization of SAD-ASPD, it appears that individuals with this comorbidity may experience the “worst of both worlds,” i.e., that they do not seem to gain much of a protective benefit from either their SAD or ASPD symptoms, but experience fear in social situations and engage in antisocial behaviors at comparable rates of endorsement to those in the SAD and ASPD only groups, respectively.

The study has limitations that are consistent with most large-scale surveys. First, since the NESARC sample only included individuals from civilian households and group living quarters who were above the age of 18, the study did not include any adolescents or prison populations that may have different clinical presentations of SAD or ASPD. Furthermore, the prevalence of ASPD in prison populations has been shown to be substantially higher than reported in the NESARC sample (Fazel & Danesh, 2002). Second, the study examined cross-sectional data, which limits the ability to make causal claims or inferences. Third, all of the information was acquired via self-report which leads to concerns about social desirability bias and reporting accuracy. In particular, participants may have felt especially inclined to present themselves in a positive light when answering questions about their engagement in antisocial behaviors, especially behaviors that are illegal or violent in nature. Fourth, a reliance on retrospective reporting, specifically for antisocial behaviors that were endorsed prior to the age of 15 can be similarly problematic for reporting accuracy due to poor or dishonest recall. Fifth, retest reliability of the AUDADIS-IV diagnosis of SAD (k = 0.42–0.46) was relatively low compared to other psychiatric diagnoses. Although this is certainly a limitation, there are a number of reasons to remain confident about the diagnosis of SAD in the NESARC: 1) the SAD items in the AUDADIS-IV have strong construct validity and are quite similar to the list of items contained in other structured interviews; 2) the retest reliability of the SAD diagnosis (κ = .40) in the NESARC is similar to that of the Composite International Diagnostic Interview (κ = .35), which is the interview schedule used in the other large-scale epidemiological survey often cited in the anxiety disorders literature (the National Comorbidity Survey Replication; Kessler et al., 2005; Ruscio et al., 2008). 3) these items have demonstrated good internal consistency and a reliable factor structure (Iza et al., in press); and 4) the diagnosis of SAD based on the AUDADIS-IV has shown excellent predictive and convergent validity in a large number of studies by our group and others (e.g., Blanco et al., 2013; Grant et al., 2005; Rubio et al., 2013; Rubio et al., in press) In addition, lower reliability estimates contribute to increased error variance and decreased power to detect significant effects, which should render our findings all the more conservative.

Despite these limitations, our study explored the impact of comorbid SAD-ASPD using a large, nationally representative sample. Comorbid SAD-ASPD was associated with greater impairment across a wide range of indicators compared to either SAD or ASPD alone.

However, individuals with SAD-ASPD were more likely to seek treatment for their SAD symptoms compared to those with SAD alone. Although SAD and ASPD are typically conceptualized as disorders on the opposite end of the behavior inhibition spectrum, this study provides evidence for the prevalence of this comorbidity and supports the view that SAD and ASPD may be best conceptualized as separate but correlated disorders. Establishing the clinical differences for individuals with comorbid SAD-ASPD, as well as how they respond to established treatments for SAD (e.g., CBT, SSRIs), may be particularly important for improving intervention methods for individuals who have atypical presentations of SAD.

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Highlights

- SAD and ASPD are often conceptualized as divergent disorders.
- SAD-ASPD was related to greater impairment than SAD or ASPD alone.
- SAD-ASPD was related to greater psychiatric comorbidity than SAD or ASPD alone.
- SAD-ASPD individuals were more likely to seek treatment for SAD.
- SAD and ASPD appear to be two separate but correlated disorders.

Table 1

Demographic characteristics of individuals with lifetime social anxiety disorder (SAD), antisocial personality disorder (ASPD), and comorbid SAD-ASPD

	SAD-ASPD		**SAD no ASPD**[1]					**ASPD no SAD**[1]				
	n = 210		**n = 1773**					**n = 1212**				
	%	**SE**	**%**	**SE**	**OR**	**95% CI**		**%**	**SE**	**OR**	**95% CI**	
Sex												
Male	64.86	3.98	37.42	1.31	**0.32**	**0.23**	**0.46**	74.34	1.44	**1.57**	**1.06**	**2.32**
Female	35.14	3.98	62.58	1.31	1.00	1.00	1.00	25.66	1.44	1.00	1.00	1.00
Race/ethnicity												
White	75.02	3.38	78.75	1.51	1.00	1.00	1.00	69.69	2.20	1.00	1.00	1.00
Black	9.19	1.80	7.49	0.74	0.78	0.49	1.24	11.54	1.21	1.35	0.85	2.14
Native American	6.50	2.23	3.31	0.57	0.49	0.21	1.11	5.51	0.94	0.91	0.40	2.06
Asian	2.49	1.73	2.95	0.65	1.13	0.32	3.95	2.05	0.51	0.89	0.20	3.96
Hispanic	6.80	1.65	7.50	0.84	1.05	0.59	1.86	11.21	1.50	1.78	0.99	3.17
Age												
18–29	34.87	4.55	20.35	1.18	1.00	1.00	1.00	37.91	1.76	1.00	1.00	1.00
30–44	33.82	4.57	33.22	1.41	**1.68**	**1.02**	**2.78**	35.76	1.65	0.97	0.59	1.61
45–64	27.75	3.88	35.97	1.34	**2.22**	**1.38**	**3.59**	23.80	1.52	0.79	0.49	1.27
65+	3.57	2.10	10.46	0.71	**5.02**	**1.41**	**17.95**	2.54	0.54	0.66	0.18	2.45
Education												
Less than high school	30.95	4.13	12.98	0.97	**0.29**	**0.19**	**0.44**	21.75	1.60	**0.57**	**0.37**	**0.88**
High School	31.12	3.61	31.70	1.51	0.70	0.47	1.04	31.52	1.55	0.82	0.56	1.21
College or beyond	37.93	3.78	55.32	1.66	1.00	1.00	1.00	46.73	1.78	1.00	1.00	1.00
Individual Income												
$0-19,999	58.77	4.47	51.82	1.63	1.00	1.00	1.00	48.03	1.95	1.00	1.00	1.00
$20,000-$34,999	23.57	3.56	23.46	1.24	1.13	0.72	1.78	25.41	1.55	1.32	0.83	2.10
$35,000-$69,999	12.84	2.52	19.43	1.40	**1.72**	**1.05**	**2.80**	20.12	1.37	**1.92**	**1.15**	**3.19**
≥$70,000	4.83	1.94	5.29	0.74	1.24	0.49	3.15	6.44	0.90	1.63	0.64	4.14
Employment												
Employed	65.43	4.13	63.24	1.44	1.00	1.00	1.00	70.30	1.67	1.00	1.00	1.00

	SAD-ASPD		SAD no ASPD[1]					ASPD no SAD[1]				
	n = 210		n = 1773					n = 1212				
	%	SE	%	SE	OR	95% CI		%	SE	OR	95% CI	
Unemployed	34.57	4.13	36.76	1.44	1.10	0.74	1.64	29.70	1.67	0.80	0.54	1.19
Marital Status												
Married	53.84	4.29	60.81	1.34	1.00	1.00	1.00	50.47	1.75	1.00	1.00	1.00
Widowed/Separated/Divorced	17.87	3.16	17.93	0.92	0.89	0.56	1.41	16.93	1.33	1.01	0.63	1.63
Never Married	28.30	4.12	21.25	1.26	0.66	0.43	1.02	32.60	1.79	1.23	0.79	1.92

[1]Compared to SAD-ASPD group. Bolded Adjusted Odds Ratios (AORs) and confidence intervals (CIs) illustrate significant relationships.

Table 2

Percentages of lifetime antisocial personality disorder (ASPD), social anxiety disorder (SAD), and comorbid SAD-ASPD individuals who endorsed specific ASPD criteria and antisocial behaviors

	SAD-ASPD			SAD no ASPD[1]						ASP D no SAD [1]					
	n = 210			n = 1773						n = 1212					
	%	95% CI		%	95% CI		AOR	95% CI		%	95% CI		AOR	95% CI	
ASPD Criteria															
Failure to conform to social norms	100.00	N/A	N/A	62.72	59.93	65.43	N/A	N/A	N/A	99.75	99.22	99.92	N/A	N/A	N/A
Deception	60.20	51.38	68.40	12.29	10.53	14.31	**0.11**	**0.08**	**0.17**	56.74	53.01	60.41	0.95	0.63	1.42
Impulsiveness	68.94	60.23	76.49	26.89	24.42	29.52	**0.18**	**0.12**	**0.26**	61.60	57.74	65.32	0.81	0.55	1.19
Irritability and Aggressiveness	81.27	73.14	87.37	17.15	14.94	19.61	**0.06**	**0.03**	**0.10**	84.36	81.85	86.59	1.09	0.67	1.79
Reckless disregard for safety	67.58	58.30	75.66	32.91	30.16	35.79	**0.25**	**0.16**	**0.40**	72.52	69.21	75.60	1.04	0.65	1.67
Consistent Irresponsibility	62.86	53.53	71.31	24.62	22.15	27.28	**0.25**	**0.16**	**0.37**	54.60	50.90	58.25	0.77	0.52	1.15
Lack of remorse	62.71	53.58	71.02	16.58	14.52	18.88	**0.14**	**0.09**	**0.22**	57.78	54.54	60.95	0.78	0.52	1.17
Antisocial Behaviors															
Cut class	77.67	70.21	83.69	29.32	26.85	31.92	**0.16**	**0.10**	**0.24**	74.13	70.75	77.25	0.93	0.60	1.44
Stay out late w/o permission	68.70	60.17	76.13	31.92	29.34	34.62	**0.27**	**0.18**	**0.40**	76.02	72.76	79.00	1.51	0.99	2.29
Bullied/pushed people around	47.72	39.69	55.86	8.09	6.67	9.77	**0.12**	**0.08**	**0.19**	49.86	46.35	53.38	1.06	0.73	1.53
Run away from home (at least 2x)	41.05	32.12	50.62	7.04	5.80	8.52	**0.12**	**0.07**	**0.19**	38.51	35.19	41.94	1.12	0.72	1.75
Absent from school a lot	46.46	37.90	55.25	13.98	12.11	16.09	**0.24**	**0.16**	**0.38**	39.70	36.22	43.29	0.82	0.57	1.18
Quit job w/o a plan	56.08	46.66	65.09	20.06	17.83	22.49	**0.26**	**0.17**	**0.38**	45.84	42.31	49.41	0.72	0.49	1.06
Quit school program w/o a plan	29.22	21.68	38.11	7.33	6.05	8.86	**0.27**	**0.17**	**0.45**	23.17	20.31	26.29	0.81	0.53	1.23
Travel around w/o a plan	25.55	18.94	33.51	5.28	4.25	6.55	**0.17**	**0.11**	**0.29**	23.37	20.55	26.46	1.00	0.65	1.52
Had no place to live (at least 1 mo.)	26.43	19.10	35.34	4.87	3.82	6.20	**0.18**	**0.11**	**0.30**	20.47	17.45	23.86	0.83	0.55	1.27
Lived w/ family/friends due to not having a place to live (at least 1 mo.)	55.55	46.29	64.44	20.79	18.57	23.20	**0.21**	**0.15**	**0.31**	46.21	42.25	50.22	0.74	0.51	1.09
Lied a lot	55.05	45.95	63.82	10.82	9.14	12.77	**0.12**	**0.08**	**0.18**	43.57	40.01	47.20	0.68	0.45	1.03
Use false name/alias	17.87	11.94	25.88	2.53	1.88	3.40	**0.13**	**0.07**	**0.23**	20.33	17.51	23.47	1.30	0.77	2.22
Scam/con someone for money	16.92	11.39	24.41	1.18	0.72	1.95	**0.09**	**0.04**	**0.19**	19.49	16.79	22.50	1.22	0.76	1.97
Do things that could have easily hurt you/someone else	57.50	47.96	66.51	25.02	22.47	27.75	**0.24**	**0.15**	**0.36**	57.83	53.86	61.70	0.86	0.56	1.34

	SAD-ASPD			SAD no ASPD[1]						ASP D no SAD [1]					
	n = 210			n = 1773						n = 1212					
	%	95% CI		%	95% CI		AOR	95% CI		%	95% CI		AOR	95% CI	
Get more than 3 traffic tickets for reckless driving/speeding/ accidents	21.20	15.28	28.65	10.42	8.69	12.46	**0.57**	**0.35**	**0.90**	30.05	26.74	33.58	1.40	0.91	2.15
Have driver's license suspended for moving violations	28.98	21.78	37.43	8.12	6.55	10.03	**0.34**	**0.21**	**0.56**	28.63	25.73	31.71	0.97	0.63	1.49
Destroy/break/vandalize property	42.85	34.70	51.41	4.84	3.62	6.44	**0.07**	**0.04**	**0.12**	43.76	40.25	47.34	0.90	0.60	1.33
Start a fire on purpose	13.83	7.70	23.57	0.92	0.53	1.60	**0.07**	**0.03**	**0.17**	15.92	13.48	18.71	1.02	0.52	2.02
Fail to pay off your debts	32.10	23.86	41.63	7.14	5.90	8.62	**0.17**	**0.11**	**0.28**	25.61	22.45	29.05	0.77	0.49	1.21
Steal something when no one was around	51.65	69.62	15.85	13.91	18.00	**0.14**	**0.09**	**0.21**	60.50	56.70	64.19	0.88	0.56	1.39	
Forge someone else's signature	13.31	8.33	20.61	2.90	2.11	3.97	**0.19**	**0.09**	**0.38**	16.59	14.26	19.21	1.40	0.81	2.41
Shoplift	67.13	57.41	75.57	19.33	17.02	21.87	**0.15**	**0.10**	**0.23**	66.71	63.25	70.01	0.92	0.60	1.41
Rob/mug someone	2.55	0.97	6.51	0.31	0.11	0.91	**0.26**	**0.07**	**0.94**	4.67	3.45	6.27	2.12	0.75	6.02
Make money illegally	28.27	20.44	37.68	3.37	2.39	4.74	**0.12**	**0.07**	**0.23**	26.93	23.85	30.25	0.89	0.57	1.41
Do things you could have been arrested for	75.39	66.87	82.30	24.68	22.15	27.40	**0.13**	**0.08**	**0.19**	75.28	72.22	78.11	0.81	0.53	1.23
Force someone to have sex with you	1.12	0.31	3.93	0.45	0.20	0.99	0.79	0.08	7.38	1.36	0.82	2.24	1.29	0.33	4.97
Get into a lot of fights that you started	32.48	23.81	42.55	3.23	2.44	4.26	**0.08**	**0.05**	**0.13**	32.58	29.24	36.11	1.07	0.69	1.68
Get into a fight that came to blows with a significant other	35.05	27.61	43.28	14.49	12.61	16.58	**0.27**	**0.18**	**0.38**	33.71	30.55	37.02	1.20	0.81	1.77
Use a weapon in a fight	22.27	16.18	29.83	3.56	2.65	4.76	**0.16**	**0.09**	**0.29**	25.84	22.92	29.00	1.32	0.85	2.04
Hit someone so hard you injured them	39.48	32.04	47.45	5.93	4.71	7.44	**0.14**	**0.09**	**0.22**	45.04	41.70	48.43	1.25	0.87	1.80
Harass/threaten/blackmail someone	23.93	17.75	31.43	2.28	1.56	3.34	**0.09**	**0.05**	**0.17**	21.86	18.94	25.10	0.91	0.59	1.39
Physically hurt another person on purpose	34.68	27.16	43.04	7.01	5.63	8.69	**0.17**	**0.10**	**0.26**	40.20	36.52	44.00	1.22	0.83	1.78
Hurt/be cruel to an animal/pet on purpose	23.07	16.54	31.22	2.67	1.91	3.73	**0.12**	**0.07**	**0.20**	16.60	14.18	19.34	**0.55**	**0.33**	**0.91**

[1] Compared to SAD-ASPD group. Bolded Adjusted Odds Ratios (AORs) and confidence intervals (CIs) illustrate significant relationships.

Note. N/A = not applicable. AORs are adjusted for sex, age, education, and individual income.

Table 3

Clinical features among individuals with social anxiety disorder (SAD), antisocial personality disorder (ASPD), and comorbid SAD-ASPD

	SAD -ASPD			SAD n o ASPD[1]						ASPD no SAD [1]					
	n = 210			n = 1773						n = 1212					
	Mean	95% CI		Mean	95% CI		*F*	*p*		Mean	95% CI		*F*	*p*	
No. of feared social situations	6.90	6.32	7.49	6.61	6.45	6.77	0.45	0.5049		4.08	3.56	4.61	**59.14**	**<0.0001**	
No. of antisocial behaviors	12.20	11.56	12.85	3.26	3.05	3.46	**608.63**	**<0.0001**		11.90	11.56	12.25	0.28	0.6010	
No. of ASPD criteria	5.04	4.81	5.26	1.93	1.83	2.03	**537.65**	**<0.0001**		4.87	4.79	4.96	2.18	0.1444	
SF-12 subscales															
Social functioning scale	42.46	39.85	45.07	47.11	46.33	47.88	**14.55**	**0.0003**		48.73	47.88	49.58	**16.95**	**0.0001**	
Role emotional scale	42.59	39.91	45.26	46.94	46.23	47.66	**13.60**	**0.0005**		48.54	47.71	49.37	**14.93**	**0.0003**	
Mental health scale	41.58	39.43	43.74	46.25	45.53	46.96	**25.66**	**<0.0001**		48.38	47.56	49.21	**31.95**	**<0.0001**	
	%	95% CI		%	95% CI		AOR	95% CI		%	95% CI		AOR	95% CI	
Drinking heavily during antisocial behaviors															
Any?	38.44	29.56	48.18	24.69	20.60	29.30	**0.54**	**0.34**	**0.86**	33.68	30.40	37.14	0.81	0.52	1.26
All?	11.78	6.86	19.47	7.88	5.62	10.93	0.78	0.40	1.53	11.27	9.20	13.74	1.14	0.62	2.11
Treatment sought for SAD?	23.61	16.90	31.95	15.43	13.42	17.68	**0.55**	**0.35**	**0.85**	N/A	N/A	N/A	N/A	N/A	N/A
Perceived health status															
Excellent	13.38	8.58	20.28	21.38	18.83	24.17	1.00	1.00	1.00	23.25	20.39	26.37	1.00	1.00	1.00
Very good	27.24	20.10	35.79	30.62	28.02	33.36	0.73	0.38	1.39	30.41	27.34	33.65	0.65	0.35	1.21
Good	31.40	23.20	40.95	26.46	23.90	29.19	0.49	0.22	1.07	24.90	22.04	28.01	**0.47**	**0.24**	**0.95**
Fair	16.94	11.58	24.10	14.70	12.72	16.94	0.60	0.26	1.39	14.05	11.81	16.64	0.71	0.35	1.46
Poor	11.03	6.68	17.70	6.83	5.56	8.38	0.60	0.23	1.55	7.39	5.83	9.34	0.73	0.30	1.78
Interference with work/daily activities															
All of the time	11.14	6.61	18.16	4.82	3.77	6.16	**0.23**	**0.12**	**0.47**	4.71	3.41	6.49	**0.36**	**0.18**	**0.71**
Most of the time	9.95	6.46	15.03	8.52	6.98	10.36	0.60	0.33	1.10	6.62	5.04	8.65	**0.50**	**0.27**	**0.92**
Some of the time	20.29	13.31	29.68	15.21	13.39	17.23	**0.47**	**0.27**	**0.83**	10.27	8.38	12.52	**0.31**	**0.17**	**0.55**
A little of the time	17.48	11.04	26.54	16.08	14.09	18.29	0.59	0.31	1.13	14.93	12.48	17.77	0.58	0.32	1.07
None of the time	41.14	31.47	51.55	55.37	52.42	58.28	1.00	1.00	1.00	63.46	59.89	66.89	1.00	1.00	1.00
Felt downhearted and depressed															

	SAD -ASPD			SAD n o ASPD[1]						ASPD no SAD [1]					
	n = 210			n = 1773						n = 1212					
	Mean	95% CI		Mean	95% CI		*F*	*p*		Mean	95% CI		*F*	*p*	
All of the time	9.08	4.99	15.98	3.92	2.94	5.21	**0.25**	**0.10**	**0.63**	3.50	2.42	5.05	**0.18**	**0.08**	**0.45**
Most of the time	17.40	11.71	25.07	10.86	9.14	12.85	**0.35**	**0.19**	**0.63**	9.25	7.48	11.39	**0.30**	**0.15**	**0.58**
Some of the time	26.05	18.28	35.67	23.21	20.83	25.78	**0.36**	**0.19**	**0.68**	16.87	14.57	19.45	**0.24**	**0.13**	**0.44**
A little of the time	33.52	25.01	43.27	35.92	33.16	38.78	**0.52**	**0.28**	**0.96**	33.14	30.24	36.18	**0.34**	**0.19**	**0.60**
None of the time	13.94	9.14	20.68	26.08	23.71	28.61	1.00	1.00	1.00	37.24	33.76	40.85	1.00	1.00	1.00
Fired or laid off	15.63	10.25	23.11	8.14	6.69	9.88	0.65	0.40	1.06	18.07	15.62	20.80	1.29	0.80	2.08
Unemployed and looking for a job	21.58	14.21	31.39	10.51	9.04	12.17	0.57	0.32	1.02	22.18	19.56	25.04	1.23	0.70	2.16
Trouble with boss/coworker	29.34	21.79	38.23	15.48	13.42	17.78	**0.44**	**0.28**	**0.68**	22.11	19.20	25.32	**0.64**	**0.41**	**0.99**
Changed jobs/job responsibilities/hours	48.02	38.39	57.80	29.69	27.20	32.31	**0.45**	**0.28**	**0.73**	46.91	43.30	50.56	0.87	0.56	1.35
Separated or divorced or break off relationship	14.42	9.94	20.46	7.45	6.11	9.06	**0.56**	**0.34**	**0.91**	14.37	12.24	16.81	1.08	0.67	1.75
Serious problems with a neighbor/friend/relative	24.32	18.00	32.00	12.70	10.98	14.66	**0.47**	**0.30**	**0.74**	16.61	13.87	19.76	0.73	0.46	1.15

[1]Compared to SAD-ASPD group. Bolded Adjusted Odds Ratios (AORs) and confidence intervals (CIs) illustrate significant relationships.

Note. N/A = not applicable. AORs and F tests are adjusted for sex, age, education, and individual income.

Table 4

Percentage of individuals with social anxiety disorder (SAD), antisocial personality disorder (ASPD), and comorbid SAD-ASPD who endorsed lifetime criteria for other psychiatric disorders

Comorbid disorders	SAD-ASPD n = 210		SAD no ASPD[1] n = 1773					ASPD no SAD[1] n = 1212				
	%	SE	%	SE	AOR	95% CI		%	SE	AOR	95% CI	
Any Psychiatric Disorder	99.08	0.69	88.30	0.99	**0.09**	**0.02**	**0.41**	95.96	0.59	**0.21**	**0.05**	**0.92**
Any Axis I Disorder	98.38	0.82	83.99	1.09	**0.10**	**0.04**	**0.28**	93.22	0.82	**0.22**	**0.08**	**0.61**
Any Substance Use Disorder	92.02	1.97	54.36	1.54	**0.12**	**0.07**	**0.21**	86.42	1.13	**0.54**	**0.31**	**0.94**
Nicotine Dependence	65.58	4.25	28.85	1.32	**0.24**	**0.15**	**0.36**	52.68	1.94	**0.62**	**0.42**	**0.94**
Alcohol Use Disorder	82.88	3.78	43.84	1.54	**0.17**	**0.10**	**0.29**	74.87	1.51	**0.57**	**0.33**	**0.99**
Alcohol Abuse	25.01	3.82	20.37	1.14	0.72	0.46	1.12	27.26	1.67	1.14	0.72	1.80
Alcohol Dependence	57.86	4.55	23.47	1.35	**0.27**	**0.18**	**0.41**	47.61	1.79	**0.62**	**0.41**	**0.95**
Drug Use Disorder	57.20	4.47	17.87	1.20	**0.22**	**0.15**	**0.32**	51.13	2.00	0.77	0.52	1.13
Drug Abuse	44.13	4.20	14.68	1.06	**0.30**	**0.20**	**0.45**	43.62	2.01	0.93	0.63	1.38
Drug Dependence	36.38	4.71	6.43	0.75	**0.16**	**0.10**	**0.24**	21.05	1.55	**0.48**	**0.31**	**0.74**
Any Mood Disorder	72.30	4.33	52.58	1.52	**0.37**	**0.24**	**0.58**	45.03	1.79	**0.32**	**0.20**	**0.50**
Major Depressive Disorder	26.30	3.38	35.12	1.39	1.21	0.83	1.77	22.40	1.42	0.85	0.56	1.29
Bipolar I	35.75	4.79	13.25	1.03	**0.32**	**0.20**	**0.51**	16.75	1.31	**0.37**	**0.23**	**0.60**
Bipolar II	9.36	2.03	3.00	0.46	**0.33**	**0.18**	**0.58**	4.48	0.74	**0.47**	**0.25**	**0.87**
Dysthymia	9.77	2.26	11.73	0.89	0.95	0.55	1.65	7.56	0.90	0.85	0.46	1.60
Any Anxiety Disorder	67.36	3.94	52.41	1.55	**0.51**	**0.34**	**0.75**	29.55	1.54	**0.21**	**0.14**	**0.31**
Panic Disorder	32.34	3.90	20.73	1.16	**0.48**	**0.32**	**0.74**	13.27	1.21	**0.35**	**0.24**	**0.53**
Specific Phobia	47.04	4.39	37.01	1.44	**0.68**	**0.46**	**0.99**	17.40	1.34	**0.24**	**0.16**	**0.37**
GAD	34.82	4.43	21.82	1.27	**0.47**	**0.30**	**0.72**	8.60	0.89	**0.18**	**0.11**	**0.30**
Psychotic Disorder	10.66	2.77	2.61	0.39	**0.29**	**0.13**	**0.61**	3.25	0.68	**0.32**	**0.16**	**0.62**
Any Other Personality Disorder	75.16	3.80	49.79	1.45	**0.39**	**0.26**	**0.59**	39.15	1.70	**0.22**	**0.15**	**0.34**
Avoidant	37.59	4.25	21.46	1.16	**0.56**	**0.38**	**0.83**	5.83	0.96	**0.10**	**0.06**	**0.16**
Dependent	13.26	3.40	3.40	0.53	**0.30**	**0.17**	**0.54**	2.07	0.45	**0.15**	**0.07**	**0.33**
Obsessive-Compulsive	54.15	4.51	29.62	1.28	**0.37**	**0.25**	**0.55**	22.33	1.35	**0.24**	**0.16**	**0.35**
Paranoid	51.57	4.56	19.72	1.19	**0.26**	**0.18**	**0.39**	17.53	1.31	**0.20**	**0.13**	**0.31**

Comorbid disorders	SAD-ASPD n = 210		SAD no ASPD[1] n = 1773					ASPD no SAD[1] n = 1212				
	%	SE	%	SE	AOR	95% CI		%	SE	AOR	95% CI	
Schizoid	27.98	3.73	16.21	1.04	**0.59**	**0.40**	**0.88**	12.96	1.18	**0.42**	**0.27**	**0.66**
Histrionic	24.50	3.80	5.95	0.65	**0.26**	**0.16**	**0.40**	10.19	1.03	**0.34**	**0.21**	**0.54**

[1]Compared to SAD-ASPD group. Bolded Adjusted Odds Ratios (AORs) and confidence intervals (CIs) illustrate significant relationships.

Note. AORs are adjusted for sex, age, education, and individual income

Table 5

Percentages of individuals with lifetime social anxiety disorder (SAD), antisocial personality disorder (ASPD), and comorbid SAD-ASPD who endorsed significant fear in specific social situations

	SAD-ASPD			SAD no ASPD [1]						ASPD no SAD [1]					
	n = 210			n = 1773						n = 1212					
	%	95% CI		%	95% CI		AOR	95% CI		%	95% CI		AOR	95% CI	
Conversing with strangers	62.88	53.88	71.06	56.12	53.43	58.78	0.82	0.55	1.23	43.09	34.79	51.79	**0.38**	**0.24**	**0.62**
Going to parties or social gatherings	53.24	43.58	62.67	53.45	50.53	56.34	0.99	0.66	1.49	25.94	19.97	32.96	**0.29**	**0.17**	**0.50**
Dating	34.98	27.68	43.06	24.21	21.79	26.80	0.72	0.49	1.05	17.55	12.01	24.92	**0.35**	**0.20**	**0.61**
Being interviewed	44.74	36.55	53.22	47.45	44.73	50.18	1.09	0.78	1.55	29.18	22.12	37.41	**0.49**	**0.28**	**0.89**
Being in a small group	28.96	21.52	37.74	17.29	15.22	19.57	**0.56**	**0.37**	**0.85**	10.47	6.22	17.10	**0.25**	**0.13**	**0.50**
Speaking to an authority figure	48.08	39.75	56.51	49.25	46.55	51.95	1.11	0.79	1.58	30.33	22.44	39.58	**0.43**	**0.26**	**0.71**
Speaking in front of other people	89.19	82.95	93.34	89.93	88.12	91.48	1.01	0.56	1.84	61.45	53.21	69.08	**0.19**	**0.10**	**0.37**
Speaking in class	76.79	67.61	83.98	80.72	78.52	82.74	1.33	0.82	2.17	52.71	43.98	61.28	**0.32**	**0.18**	**0.58**
Speaking at a meeting	69.39	60.64	76.93	73.59	70.99	76.04	1.12	0.75	1.66	36.07	28.18	44.79	**0.26**	**0.15**	**0.43**
Eating or drinking in front of people	21.82	15.34	30.06	17.74	15.71	19.96	0.95	0.61	1.48	9.73	6.14	15.07	**0.34**	**0.16**	**0.72**
Writing in front of someone	32.53	25.35	40.65	21.00	18.71	23.49	0.67	0.44	1.00	10.81	6.74	16.89	**0.23**	**0.11**	**0.46**
Performing in front of other people	78.92	69.82	85.83	80.34	77.92	82.56	0.97	0.57	1.66	44.00	35.89	52.45	**0.23**	**0.12**	**0.41**
Taking an important exam	51.39	43.32	59.39	51.51	48.75	54.27	0.96	0.67	1.39	37.95	30.79	45.68	**0.54**	**0.34**	**0.86**

[1] Compared to SAD-ASPD group. Bolded Adjusted Odds Ratios (AORs) and confidence intervals (C Is) illustrate significant relationships.

Note. AORs are adjusted for sex, age, education, and individual income.