American Journal of Orthopsychiatry
2016, Vol. 86, No. 5, 552–563

http://dx.doi.org/10.1037/ort0000170

Prevalence of *DSM–IV* Intermittent Explosive Disorder in Black Adolescents: Findings From the National Survey of American Life, Adolescent Supplement

Diane Graves Oliver
Hood College

Cleopatra H. Caldwell, Nakesha Faison, Julie A. Sweetman, Jamie M. Abelson, and James S. Jackson
University of Michigan

Little is known about the epidemiology of *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*) intermittent explosive disorder (IED) in adolescents, and no information is currently available regarding the relationship between race/ethnicity and IED among Black youth in the United States. Using the World Health Organization World Mental Health Composite International Diagnostic Interview (Adolescent Version), we estimated the prevalence, severity, and disability of IED in a national, probability sample of African American and Caribbean Black youth (ages 13–17) from the National Survey of American Life, Adolescent Supplement. Face-to-face surveys of 810 African American and 360 Caribbean Black youth were conducted between 2001 and 2003. We calculated lifetime and 12-month diagnoses of IED using diagnostic algorithms based on *DSM–IV* and assessed IED disability using a modified Sheehan Disability Scale. Overall findings indicated lifetime and 12-month IED prevalence rates of 9.2% and 7.0%, respectively. Lifetime prevalence rates of IED were 9.0% for African American and 12.4% for Caribbean Black teens. Within the past 12 months, 6.7% of African American and 11.5% of Caribbean Black adolescents met diagnostic criteria for IED. Lifetime and 12-month IED were associated with anxiety disorders. In addition, few teens with lifetime IED received any treatment. Findings are consistent with recent evidence that intermittent explosive disorder may be more common than previously considered, especially among adolescents. Significant acts of aggression and impairment are associated with IED, and low treatment rates indicate that more research on this disorder and intervention options is warranted.

Intermittent explosive disorder is identified in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; American Psychiatric Association, 2013) as an impulse-control disorder distinguished by repeated episodes of verbal or physical aggression, or destructive behavioral outbursts that are out of proportion to psychosocial stressors or provocation, and that are not better accounted for by another mental disorder, medical condition, or the direct physiologic effects of medication or other substance with psychotropic properties. These aggressive episodes are described as having a rapid onset (Felthous, Bryant, Wingerter & Barratt, 1991; Kulper, Kleiman, McCloskey, Berman, & Coccaro, 2015; Mattes, 1990), short duration (McElroy, Soutullo, Beckman, Taylor, & Keck, 1998), and involve physical, verbal, destructive and nondestructive property assault. Such rage outbursts are associated with substantial distress about the outbursts, impairment in social and occupational functioning, and often legal and financial problems (Mattes & Fink, 1990; McCloskey, Berman, Noblett, & Coccaro, 2006; McElroy et al., 1998). Aggressive outbursts often occur in response to a minor provocation by a close friend, partner, or associate, although in some cases they may occur without identifiable provocation (Murray-Close, Ostrov, Nelson, Crick, & Coccaro, 2010). Less severe episodes involving verbal or nondestructive property assault often occur between more severe assaultive and destructive episodes (Coccaro, Kavoussi, Berman, & Lish, 1998; McElroy et al., 1998).

This article was published Online First April 14, 2016.

Diane Graves Oliver, Department of Psychology, Hood College; Cleopatra H. Caldwell, Nakesha Faison, Julie A. Sweetman, Jamie M. Abelson, and James S. Jackson, Program for Research on Black Americans, Institute for Social Research, University of Michigan.

This research was supported by Contract U01-MH-57716 from the National Institute of Mental Health and the Office of Behavioral and Social Sciences Research at the National Institutes of Health. Preparation of this article was supported by a fellowship to Diane Graves Oliver through a National Institute of Mental Health postdoctoral training grant (NIMH 2 T32 MH16806).

We thank everyone who participated in conducting the National Survey of American Life (NSAL), the NSAL Adolescent Workgroup, Raymond Baser, and Jane Sheldon for assistance with development and preparation of this article.

Correspondence concerning this article should be addressed to Diane Graves Oliver, Department of Psychology, Hood College, 401 Rosemont Avenue, Frederick, MD 21701. E-mail: oliver@hood.edu

Some authorities doubt the validity of intermittent explosive disorder (IED) as a unique disorder, seeing the failure to resist aggressive impulses (e.g., rage outbursts) instead as a general symptom that occurs in a wide range of psychiatric and medical disorders. Others consider the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV;* American Psychiatric Association, 1994) criteria to be appropriate but incomplete because of the vague operationalization of an irresistible impulse and the lack of emphasis on the uncontrollable and ego-dystonic nature of the aggressive acts (McElroy, 1999). Although the *DSM–5* diagnostic classification includes a general operationalization of IED aggressive behaviors influenced by recent research findings, more studies are needed to assess the efficacy of this clarification. Despite these notable concerns, IED is generally considered to be a distinct mental disorder associated with significant morbidity that may respond to psychotropic medications and cognitive–behavioral therapy (Coccaro, 2012; McCloskey, Noblett, Deffenbacher, Gollan, & Coccaro, 2008; McElroy, 1999; McElroy et al., 1996).

Intermittent explosive disorder was first introduced as a psychiatric diagnosis related to impulse dyscontrol in the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; *DSM–III*; American Psychiatric Association, 1980). The distinctive feature of impulse control disorders is the failure to resist an impulse, drive, or temptation to perform an act that is harmful to self or others. In most of these disorders the individual feels a build-up of tension or arousal before committing the act and then experiences pleasure, gratification, or relief at the time the act is committed. After the episode the individual may experience remorse, regret, or embarrassment (Coccaro, 2012; Kulper, Kleiman, McCloskey, Berman, & Coccaro, 2015; McElroy, 1999).

Several large epidemiological studies attempt to address the limited available data on prevalence rates for IED using diagnostic interviews based on *DSM–IV* criteria (Al-Hamzawi et al., 2012; Bromet et al., 2005; Fincham et al., 2009; Kessler et al., 2006; McLaughlin et al., 2012; Ortega, Canino, & Alegria, 2008; Yoshimasu, Kawakami, & WMH-J 2002–2006 Survey Group, 2011). The present study adds to this important, growing body of literature with a focus on Black American adolescents. It is difficult to incorporate findings from these studies with data from previous research, as it is unclear how many of the identified individuals in the current studies would have meet *DSM–III* or *DSM–IV* criteria for IED, as many participants in those previous studies also had underlying neurologic (e.g., epilepsy) or psychiatric (e.g., schizophrenia) disorders that could account for their rages. In fact, in their review of the literature McElroy and colleagues (1998) did not find any methodological studies of individuals with strictly diagnosed *DSM–IV* IED.

Data from clinical treatment studies and surveys of psychiatric inpatients and outpatients suggest that the rates of IED in clinical settings range from 1% to 3% (Felthous et al., 1991; Monopolis & Lion, 1983; Posternak & Zimmerman, 2002). Given that these populations have increased rates of psychopathology compared to community settings, these data are consistent with the *DSM–IV* conceptualization that IED is a rare condition. However, changes in the diagnostic criteria of IED from *DSM–III* to *DSM–IV*, the development of integrated research criteria for IED (IED-IR) by Coccaro and colleagues (1998, 2012), and the current criteria utilized in the *DSM–5*, have likely had a significant impact on these prevalence rates. The *DSM* modifications include an emphasis on severity, frequency, the nature and pathology of the aggressive behavior, and adjustments to the inclusion/exclusion criteria. Earlier studies may underestimate the rate of IED because cases that did not meet criteria according to the *DSM–III* met criteria using the *DSM–IV*. For example, *DSM–IV* criteria for IED no longer required the exclusion of generalized aggression or impulsivity between seriously aggressive episodes. In the study of IED conducted by Felthous and colleagues (1991) this criterion eliminated a majority of those with clinically significant histories of impulsive aggressive behavior. Assessment of prevalence rates is further complicated by the changes to the IED diagnostic criteria in the *DSM–5*. Aggressive episodes have been operationalized as either three outbursts within a 12-month period involving physical damage or assault, or verbally or physically aggressive outbursts occurring an average of two times per week for 3 months that do not result in damage or physical injury. The inclusion of verbal arguments in the diagnostic criteria has mixed support (Look, McCloskey, & Coccaro, 2015; Wakefield, 2015). In addition, individuals as young as 6 years old may now be diagnosed with IED, and the diagnosis can be made in addition to attention deficit/hyperactivity disorder (ADHD), conduct disorder, oppositional defiant disorder, and autism spectrum disorder when aggressive outbursts warrant independent clinical attention (American Psychiatric Association, 2013).

In a study investigating prevalence rates of IED in an adult community sample of primarily middle-aged, White, female participants in the United States, Coccaro, Schmidt, Samuels, and Nestadt (2004) found that problematic aggressive behavior, as defined by IED, may be more common than previously thought. Lifetime and 1-month prevalence estimates of either *DSM–IV* IED or IED-IR were 6.3% and 2.4%, respectively. In their reanalysis of data obtained from a large clinical sample of adult psychiatric outpatients, Coccaro and colleagues (2005) identified a rate of 6.2% for lifetime IED and 3.1% for current IED by *DSM–IV* criteria. The National Comorbidity Survey Replication, a nationally representative household survey of 9,282 adults in the United States, found lifetime and 12-month prevalence rates of 7.3% and 3.9%, respectively, for IED using *DSM–IV* criteria (Kessler et al., 2006). More recently, lifetime and 12-month prevalence rates for adults in a Japanese community sample (Yoshimasu et al., 2011) were found to be 2.1% and 0.7%, respectively, and findings from a community sample of adults in Iraq showed a lifetime prevalence rate of 1.7% and a 12-month prevalence rate of 1.5% (Al-Hamzawi et al., 2012). Additionally, a large international community-based study of adults by Bromet and colleagues (2005) found the highest rates of lifetime IED in women and men younger than 25 to be 9% and 8%, respectively. Although the literature on prevalence rates of IED has been impacted by the progressive changes in *DSM* diagnostic classification, it remains an understudied, significant mental health condition that negatively affects health, safety, and well-being of individuals, and their respective communities (McCloskey, Kleabir, Berman, Chen, & Coccaro, 2010).

Regardless of the criteria used, there is remarkable consistency in the descriptions of individuals with IED. First, IED appears to begin in childhood, adolescence, or early adulthood (Olvera et al., 2001) and follows a chronic course (Mattes, 1990; McElroy, 1999). Recent research by McLaughlin et al. (2012) investigated the prevalence rates of IED in a community-based adolescent

sample in the United States and discovered lifetime and 12-month prevalence rates of 5.3% and 6.2%, respectively, using *DSM–IV* criteria. In 27 patients who met *DSM–IV* criteria for IED, 75% reported that their explosive behavior began in adolescence, with a mean age of onset of 16 years and a mean duration of 20 years (McElroy et al., 1998). Coccaro and colleagues (2004) found a similar pattern in an adult community sample. Data from Coccaro et al.'s (2005) study of psychiatric outpatients support these findings. Thirty-one percent of individuals diagnosed with IED had an onset of symptoms in preadolescence. Forty-four percent of individuals with IED met diagnostic criteria by the end of early adulthood, with an additional 19% and 6% experiencing the onset of the disorder in the third and fourth decades, respectively (Coccaro et al., 2005).

Gender, Racial, and Ethnic Factors

Information regarding gender differences in IED is limited and conflicting. Coccaro (2000) found that IED was more common in men, with a ratio of 3:1. Research from Japan (Yoshimasu et al., 2011) and Iraq (Al-Hamzawi et al., 2012) demonstrates a higher prevalence of IED in men. However, women also have problematic impulsive aggression, and some report a rise in intermittent explosive symptoms when they are premenstrual (McElroy et al., 1998). Findings from Coccaro and Danehy's (2006) study of psychiatric outpatients with IED suggested the male–female ratio was closer to 1:1. McLaughlin et al. (2012) also found this lack of a gender difference in their community-based study of adolescents. The *DSM–5* suggests IED may be more common in males, with an odds ratio of 1.4 to 2.3; however, it is noted that other studies have not found gender differences in prevalence rates.

There is only one systematic study of racial or ethnic factors associated with IED. Ortega and colleagues (2008) examined the prevalence rates and psychosocial correlates of *DSM–IV* IED in adults from different Latino ethnic groups. They identified prevalence rates of 5.8% and 4.1% for lifetime and 12-month IED, respectively, with males more likely to receive a lifetime IED diagnosis than females. Having poor/fair English proficiency and being born outside the U.S. mainland served as protective factors. Unemployment was a common risk factor for IED, and this disorder was linked to anxiety, depression, and substance use disorders for these populations. Puerto Ricans were more likely to receive this diagnosis than Cubans, Mexicans, and other Latinos; however, they did not report worse impairment compared with the other groups.

Although important commonalities exist, there are also considerable ethnic variations within the Black population. Sensitivity to the heterogeneity of racial and ethnic groups is an essential component of cultural competence; therefore, health researchers must be cognizant of such within-group variations (Agyemang, Bhopal, & Bruijnzeels, 2005; Sue, Zane, Nagayama Hall, & Berger, 2009).

Blacks from the Caribbean constitute the largest subgroup of Black immigrants in the United States (Schmidley & Gibson, 1999; Williams, Lavizzo-Mourey, & Warren, 1994), and as Greer (2013) discussed, African Americans and Caribbean Blacks differ in their perceptions, values, and experiences. With a few notable exceptions (Griffith, Johnson, Zhang, Neighbors, & Jackson, 2011; Williams, Gonzalez, et al., 2007; Williams, Haile, et al., 2007), most previous studies of mental health in the Black community have not addressed the mental health consequences of within-group ethnic variations. Such analyses are vital due to changing immigration patterns (e.g., from the Caribbean and from Africa), varying socioeconomic conditions, differences in living patterns and family structure, and social circumstances that have occurred within the Black community over the past several decades (Jackson et al., 2004). For example, studies investigating within-group ethnic differences in the Black population in the United Kingdom and the Netherlands have consistently demonstrated elevated rates of schizophrenia for Caribbean immigrants (Harrison, Owens, Holton, Neilson, & Boot, 1988; Selten, Slaets, & Kahn, 1997). Studies in the United States have also shown mental health differences between Blacks of African and Caribbean descent (Griffith et al., 2011; Williams, Gonzalez et al., 2007; Williams, Haile et al., 2007). Therefore, there is reason to investigate elevated risk of psychiatric morbidity for IED among various ethnic groups within the Black community in the United States.

Method

Sample

The adolescent sample that supplements the National Survey of American Life (NSAL) has been described in detail elsewhere (Seaton et al., 2008). Respondents were 810 African American and 360 Caribbean Black adolescents (N = 1,170) from around the United States who participated in face-to-face interviews conducted by the Survey Research Center staff at the University of Michigan from February 2001 to June 2003. The NSAL was based on a stratified, multistage area probability sample of the noninstitutionalized civilian population in the 48 contiguous states (Jackson et al., 2004). The institutional review board of the University of Michigan approved all procedures.

The NSAL adolescent supplement was weighted to adjust for disproportionate sampling, nonindependence in selection probabilities within households, and nonresponse of households and individuals. The weighted data were poststratified to approximate the national population distributions for age (13, 14, 15, 16, and 17 years) and gender (males and females) subgroups among Black youth. Participants in the African American adolescent sample self-identified as Black and did not indicate ancestral connection to the Caribbean. Household and adult participant identification determined the ethnicity of Caribbean Black youth.

The overall sample was composed of 563 males and 607 females with a mean age of 15 years (SD = 1.42). Approximately 96% of the sample was enrolled in high school, with 9th grade the average. The median family income was $28,000 (approximately $26,000 for African Americans and $32,250 for Caribbean Blacks). See Table 1 for the sociodemographic characteristics of the sample.

Diagnostic Assessment

Participants completed a diagnostic interview using the NSAL adolescent World Mental Health Composite International Diagnostic Interview (WMH-CIDI; Andrews & Peters, 1998; Kessler et al., 1998). This lay-administered, fully structured diagnostic questionnaire generates classifications of psychiatric disorders as de-

Table 1. *Sociodemographic Characteristics of Participants*

Characteristic	*n*	%
Ethnicity		
African American	810	63.2
Caribbean Black	360	30.8
Gender		
Male	563	50.0
Female	607	50.0
Age (years)		
13	221	20.1
14	256	20.1
15	214	20.5
16	227	20.0
17	252	19.1
Grade in school		
5–8	337	30.0
9	264	22.4
10	230	20.8
11	196	15.8
12+	143	10.9
Annual household income (US$)		
0–17,999	311	27.9
8,000–31,999	327	27.0
32,000–54,999	277	25.0
55,000+	241	20.2

Note. $N = 1{,}170$. Data are weighted.

fined by the *DSM–IV* (American Psychiatric Association, 1994) and the *International Statistical Classification of Diseases* (10th rev.; World Health Organization, 1992). Kessler and colleagues (2009) found the CIDI to have good psychometric properties with youth as young as 13 years old. The diagnoses based on the CIDI had generally good concordance with blinded clinical diagnoses for adolescents. Because this clinical reappraisal study utilized the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) as the gold standard and this interview does not include an assessment of impulse control disorders, the CIDI diagnoses of IED (detailed by Kessler et al., 2006) has not been validated.

Consistent with Kessler and colleagues (2006), several definitions of lifetime and 12-month IED that use successively more restrictive requirements were assessed in the present study. For a lifetime *DSM–IV* diagnosis of IED ("broad" lifetime IED), participants must have experienced three or more lifetime anger attacks. A "narrow" lifetime diagnosis of IED used a more stringent set of criteria consistent with other *DSM* diagnoses, and parallels the *DSM–5* criteria, required three attacks within any 12-month period. For a 12-month *DSM–IV* diagnosis of IED ("broad" 12-month IED), participants must have experienced three or more lifetime anger attacks and at least one attack in the past 12 months. The narrow 12-month diagnosis of IED required three or more attacks in the past year. A third, "intermediate,"12-month diagnosis of IED required three attacks in any 12-month period, with one in the past year.

It is important to note that mania, conduct disorder, and ADHD are included in the exclusionary criteria for IED in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; American Psychiatric Association, 2000). In the present study, participants who met diagnostic criteria for IED and also mania or conduct disorder were therefore excluded from the analyses. The assessment for ADHD, however, was obtained from the parents of the adolescents rather than the adolescents themselves, resulting in a substantial amount of missing data. Therefore, ADHD was not incorporated into the IED exclusionary criteria. Thus, the final prevalence numbers may represent an overestimation of IED rates due to our inability to rule out cases when attacks may be better explained by ADHD.

Other Measures

Several other measures were used in the present study: sociodemographics, onset and course of IED, impairment associated with IED, and treatment. Sociodemographic variables included ethnicity, age, gender, and grade in school. The adult respondent in the adolescent's household provided household income information. The measures of onset and course of IED were based on retrospective self-report about age of first attack and number and quality of lifetime and recent attacks. Level of impairment was assessed for the 12 months prior to the interview, using a slightly modified Sheehan Disability Scale (Leon, Olfson, Portera, Farber, & Sheehan, 1997). Participants rated how much their attacks had interfered with chores at home, ability to do well at school or work, ability to get along with family, and social life using a visual analogue 11-point scale with a range of response options from *no problems* (0), *mild* (1–3), *moderate* (4–6), *severe* (7–9), to *very severe* (10). In terms of treatment, participants were asked if they had ever talked with a medical doctor or other professional (including psychologists, counselors, spiritual advisors, herbalists, acupuncturists, and other healing professionals) about their anger attacks, and if they considered the treatment they received for their anger attacks helpful or effective.

Analysis Strategy

Because the NSAL used a multistage sample design involving clustering and stratification, STATA 9.2SE was used to conduct group comparisons and estimate odds ratios and confidence intervals with the Taylor expansion approximation technique for calculating design-based variance estimates. All sample sizes reported in the tables are unweighted totals of study participants, while all reported percentages and subsequent analyses are weighted. Cross-tabulations were calculated to investigate ethnic and gender differences on prevalence estimates. The F statistics and corresponding p values from these cross-tabulations are based on the Rao-Scott chi-square test, a complex design-adjusted version of the Pearson chi-square test (Rao & Scott, 1984). Age of onset curves were derived using life table methods (Hosmer, Lemeshow, & May, 2008; Kaplan & Meier, 1958). Associations of IED and sociodemographic variables and comorbid clusters of *DSM–IV* disorders were examined using logistic regression analysis. Odds ratio (*OR*) estimates and 95% confidence intervals are presented, along with design-corrected F statistics. Statistical significance was evaluated at the $p < .05$ level with two-sided tests.

Results

Unless otherwise indicated, the *DSM–IV* definition of IED (i.e., "broad") for both lifetime and 12-month diagnoses is used. The lifetime prevalence rate of *DSM–IV* IED for the total sample (N = 1,170) was 9.2% (SE = 1.25). Within the past 12 months, 7.0% (SE = 1.03) of the participants met *DSM–IV* diagnostic criteria for IED (see Table 2). In the African American sample the lifetime prevalence rate was 9.0% (SE = 1.33) and the 12-month prevalence rate was 6.7% (SE = 1.09). Among the Caribbean Black sample, results indicated a lifetime prevalence rate of 12.4% (SE = 2.67) and a 12-month prevalence rate of 11.5% (SE = 2.58) for IED. Caribbean Blacks were significantly more likely than African American youth to meet diagnostic criteria for IED, $F(1, 40) = 4.12$, $p < .05$.

Lifetime and 12-month prevalence rates of IED for males were 12.2% (SE = 1.88) and 8.5% (SE = 1.34), respectively. Females experienced a 6.3% (SE = 1.26) lifetime prevalence rate and a 5.5% (SE = 1.21) 12-month prevalence rate of IED. Analysis indicated a significant gender difference in the lifetime prevalence rate, with adolescent males more likely than females to meet diagnostic criteria for IED, $F(1, 40) = 8.71$, $p < .01$. Relative to the prevalence of adolescents with a lifetime diagnosis of IED, the projected risk of developing IED by age 17 is slightly higher, approximately 9.7% (see Figure 1). Mean age of first anger attack for participants with 12-month IED was 10 years.

A narrow classification of lifetime IED, consistent with the *DSM–5*, revealed an overall prevalence rate of 6.2%, while intermediate and narrow classifications of 12-month IED suggest prevalence rates of 4.8% and 4.1%, respectively (see Tables 3 and 4). Multivariate logistic regressions were conducted to investigate whether specific sociodemographic correlates were linked to an increased likelihood of either 12-month or lifetime *DSM–IV* IED. These analyses were repeated for the different classifications of lifetime and 12-month IED diagnosis. Adolescent females were significantly less likely to meet broad and narrow lifetime IED diagnosis relative to males, $OR = .50$, $F(1, 40) = 8.71$, $p < .01$, and $OR = .60$, $F(1, 40) = 4.47$, $p < .05$, respectively, while no significant differences were found between age and income groups (see Table 3). Concerning 12-month IED diagnosis, Caribbean Black youth were more likely than African American teens to meet broad diagnostic classification, $OR = 1.92$, $F(1, 40) = 4.12$, $p < .05$.

Over 40% of the male adolescents with lifetime *DSM–IV* IED reported severe impairment (score of 7 or higher) associated with their anger attacks, while 29% (SE = 6.9) indicated moderate impairment (score of 4–6) (see Table 5). Using the same scoring system, 38% (SE = 9.9) of females reported severe impairment, while an additional 20% (SE = 8.6) indicated moderate impairment from their attacks. Looking at ethnic differences, 43% (SE = 7.9) of African American youth reported severe impairment compared to 31% (SE = 23.8) of Caribbean Black teens, while 28% (SE = 6.0) of African American youth reported moderate impairment from anger attacks compared to 7% (SE = 3.4) of Caribbean Black adolescents. In fact, the majority of Caribbean Black teens (62%, SE = 23) indicated mild impairment associated with their anger attacks. These ethnic differences approached significance, $F(2, 65) = 2.48$, $p < .10$.

Almost half of the participants who met either lifetime or 12-month *DSM–IV* diagnosis of IED were more likely to also meet

Table 2. *Lifetime and 12-Month Prevalence Rates of DSM–IV Intermittent Explosive Disorder for the Overall Sample and by Ethnic Group, Gender, Age, and Income Level*

	Lifetime IED					12-month IED				
Group	*n*	%	*SE*	*F*	*p*	*n*	%	*SE*	*F*	*p*
Total sample	92	9.2	1.25			71	7.0	1.03		
Ethnicity										
African American	68	9.0	1.33			51	6.7	1.09		
Caribbean Black	24	12.4	2.67			20	11.5	2.58		
				1.48	.23				4.12	.049
Gender										
Male	56	12.2	1.88			39	8.5	1.34		
Female	36	6.3	1.26			32	5.5	1.21		
				8.71	.005				3.52	.07
Age (years)										
13–14	32	7.3	1.88			26	6.1	1.65		
15–17	60	10.6	1.29			45	7.6	1.15		
				2.17	.15				.57	.45
Annual household income (US$)										
0–17,999[a]	25	6.9	1.83			16	4.6	1.46		
8,000–31,999	24	9.5	2.43			18	7.0	2.27		
32,000–54,999	28	13.8	1.80			22	10.0	1.93		
55,000+	15	7.0	2.13			14	6.7	1.96		
				2.66	.053				1.45	.23

Note. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); IED = intermittent explosive disorder.
[a] Reference group.

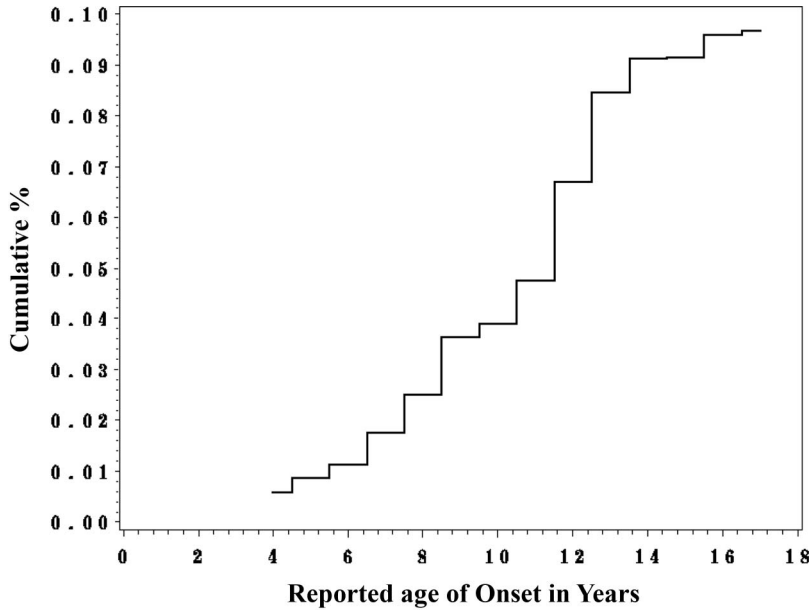

Figure 1. Age of onset distributions of 12-month *DSM–IV* intermittent explosive disorder for all 1,170 adolescents. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).

criteria for an anxiety disorder (*OR* = 1.96 and 2.95, respectively). Nearly half of the participants with lifetime or 12-month *DSM–IV* IED also met criteria for at least one other *DSM–IV* diagnosis (see Table 6). Few teens with lifetime *DSM–IV* IED received any treatment for their attacks (6.8%, *SE* = 1.7), with the majority of those being African American and male. Of the very few participants ($n = 9$) who received any type of treatment for their attacks, all of the females but only 40% of males (*SE* = 16.3) considered it effective (see Table 7).

Discussion

Lifetime and 12-month prevalence rates of intermittent explosive disorder for Black American adolescents in this study are higher than current estimates would suggest, both using *DSM–IV* diagnostic criteria and a more "narrow" criteria consistent with *DSM–5*. While the *DSM–IV* (of 2000) described IED as a rare condition, occurring in 1% to 4% of the general population, and the *DSM–5* (of 2013) reports a 12-month prevalence rate of 2.7%, results from the present study of Black youth indicate a lifetime prevalence rate of 9.2% and a 12-month prevalence rate of 7.0%. These elevated *DSM–IV* IED adolescent prevalence rates are consistent with several studies of IED in adult populations (Coccaro et al., 2004, 2005; Kessler et al., 2006) that suggest prevalence of *DSM–IV* IED may be more common than previously considered in both community and clinical populations. In addition, the current study's findings are consistent with the sole published study that investigated IED in adolescents (McLaughlin et al., 2012); thus, both studies indicate this disorder may be most common during adolescence.

It has been argued that prevalence rates for IED would increase following changes in the diagnostic criteria from *DSM–III* to *DSM–IV* (Coccaro et al., 1998; McElroy et al., 1998). Additional changes to the prevalence rates for IED will likely occur with the operationalization of aggressive behaviors in the *DSM–5* (Look, McCloskey, & Coccaro, 2015; Wakefield, 2015). The prevalence rates found in the present study may reflect a measurement change from earlier research and support several key studies (Bromet et al., 2005; McLaughlin et al., 2012) that identify IED as a significantly occurring mental health disorder for youth and young adults that is not well understood. The somewhat higher rates of IED in our sample compared to findings by these previous studies may reflect the inclusion of children with ADHD. However, as IED can be diagnosed in children with ADHD, oppositional defiant disorder, and autism spectrum disorder in the *DSM–5*, future studies will need to dimensionalize aggressive outbursts common to these disorders to carefully address comorbidity.

In addition to using *DSM–IV* criteria, the present study also assessed prevalence rates for IED utilizing increasingly restrictive diagnostic criteria as suggested by Kessler and colleagues (2006) and is consistent with *DSM–5* criteria for IED. A narrow classification of lifetime IED revealed an overall prevalence rate of 6.2%, while intermediate and narrow classifications of 12-month IED suggest prevalence rates of 4.8% and 4.1%, respectively. The intermediate and narrow diagnostic classifications of IED are more consistent with other disorder classifications in the *DSM–5* (which include exclusionary criteria and a time window for symptom clusters), and have been informed by the current literature and existing research criteria for IED (Coccaro, 2012; Coccaro et al., 1998). Importantly, in the present study, the most stringent (i.e., narrow) 12-month and lifetime IED diagnostic classifications are consistent with *DSM–5*, and still yield prevalence rates higher than expected based upon previous research with adults and current conceptualizations of this disorder.

Investigation of 12-month prevalence rates of *DSM–IV* IED identified a significant ethnic difference: Over 11% of Caribbean

Table 3. *Sociodemographic Correlates of Lifetime Intermittent Explosive Disorder Using Broad and Narrow Criteria*

	Broad criteria (*DSM–IV*)[a] (*n* = 92)				Narrow criteria[b] (*n* = 58)			
Group	% (*SE*)	*OR* (95% CI)	*F*	*p*	% (*SE*)	*OR* (95% CI)	*F*	*p*
Gender								
Male	12.20 (1.88)	1.0			7.94 (1.43)	1.0		
Female	6.28 (1.26)	.50 (.30–.84)			4.43 (1.08)	.60 (.33–1.00)		
			8.71	.005			4.47	.04
Ethnicity								
African American	9.02 (1.33)	1.0			6.37 (1.02)	1.0		
Caribbean Black	12.40 (2.67)	1.44 (.76–2.72)			3.63 (2.24)	.55 (.13–2.32)		
			1.48	.23			.81	.37
Age (years)								
13–14	7.29 (1.88)	1.0			4.52 (1.43)	1.0		
15–17	10.55 (1.29)	1.69 (.55–5.18)			7.30 (1.17)	3.53 (.92–13.48)		
			2.17	.14			1.98	.16
Grade in school								
5–8	8.32 (2.69)	1.0			6.54 (2.35)	1.0		
9	7.70 (2.34)	.72 (.24–2.13)			5.00 (1.91)	.42 (.11–1.56)		
10	14.32 (3.48)	1.13 (.31–4.19)			8.36 (2.43)	.44 (.10–2.01)		
11	7.07 (2.36)	.52 (.09–2.86)			5.01 (2.26)	.25 (.04–1.71)		
12+	8.42 (2.97)	.70 (.18–2.76)			5.21 (2.54)	.29 (.07–1.28)		
			1.13	.34			.38	.79
Annual household income (US$)								
0–17,999	6.91 (1.82)	1.0			4.38 (1.23)	1.0		
18,000–39,999	9.51 (2.43)	1.49 (.77–2.87)			6.27 (1 90)	1.63 (.75–3.56)		
32,000–54,999	13.81 (1.80)	2.09 (1.20–3.66)			9.38 (1.44)	2.48 (1.41–4.35)		
55,000+	7.03 (2.13)	1.09 (.48–2.54)			4.99 (2.00)	1.35 (.48–3.81)		
			2.66	.053			1.90	.14

Note. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); *SE* = standard error; *OR* = odds ratio; CI = confidence interval.
[a] Three or more lifetime attacks. [b] Three or more attacks in at least 1 year.

Black youth met "broad" *DSM–IV* diagnostic criteria compared to 6.7% of African American youth. This finding parallels research on ethnic group differences in the Black population in the United Kingdom and the Netherlands (Chakraborty, & McKenzie, 2002; Harrison et al., 1988; Selten et al., 1997) that found elevated rates of schizophrenia for Caribbean immigrants. Additionally, research in the United Statees has found higher rates of mood and anxiety disorders in Caribbean Black men than in African American men (Williams, Haile, et al., 2007). Importantly, however, our findings noted greater severity of impairment among the African American youth who met criteria.

Together, these results support the systematic exploration of ethnic group differences within the Black population, as suggested by Jackson and colleagues (2004), as well as Agyemang et al. (2005) and Sue et al. (2009). Such studies could elucidate how ethnic differences play roles in the meaning and manifestation of symptoms and how symptoms cluster into syndromes. Perhaps Caribbean Black youth are more likely than African American youth to exhibit mood and impulse control difficulties and psychological distress in ways that can be problematically aggressive, that are better captured by the diagnostic classification of *DSM–IV* IED or the WMH-CIDI operationalization of this disorder. An important avenue of future investigation is potential psychosocial differences between these two subgroups. However, it is also crucial to investigate IED prevalence rates in other racial and ethnic groups of adolescents to determine whether African American youth are less likely than other teens to exhibit IED symptoms (McLaughlin et al., 2012). It is important to note that ethnic differences in 12-month IED were not present using intermediate and narrow diagnostic classifications. The present findings of ethnic group differences in prevalence estimates for IED mirror similar ethnic subgroup variability in adult Latinos (Ortega et al., 2008) and support the importance of ethnic subgroup analyses in future clinical research.

Investigation of the 12-month prevalence rates of *DSM–IV* IED revealed no significant age or grade in school differences. Although previous research indicated a mean age of onset of about 16 years (Coccaro et al., 2004; McElroy et al., 1998; Olvera et al., 2001), for Black teens there may not be a difference in prevalence rates between younger teens ages 13–14 and their older counterparts ages 15–17. In fact, mean age of onset for this sample was 10 years. Consistent with the previous literature on IED, the adolescent years represent a critical developmental period for the onset of IED symptoms. Age of onset analysis revealed that by age 17, 9.7% of participants met criteria for lifetime *DSM–IV* IED.

Regardless of income level, 12-month *DSM–IV* prevalence rates of IED remained fairly consistent. Few previous studies (e.g.,

Table 4. *Sociodemographic Correlates of 12-Month DSM–IV Intermittent Explosive Disorder Using Broad, Intermediate, and Narrow Criteria*

	Broad criteria (*DSM–IV*)[a] (*n* = 71)				Intermediate criteria[b] (*n* = 47)				Narrow criteria (*DSM–IV*)[c] (*n* = 40)			
Group	% (*SE*)	*OR* (95% CI)	*F*	*p*	% (*SE*)	*OR* (95% CI)	*F*	*p*	% (*SE*)	*OR* (95% CI)	*F*	*p*
Gender												
Male	8.53 (1.34)	1.0			5.45 (1.08)	1.0			4.50 (1.23)	1.0		
Female	5.54 (1.21)	.67 (.39–1.17)			4.13 (1.09)	.82 (.43–1.56)		3.62 (1.01)	.94 (.45–1.96)			
			3.52	.07			.93	.34			.42	.52
Ethnicity												
African American	6.70 (1.09)	1.0			4.90 (.90)	1.0			3.91 (.95)	1.0		
Caribbean Black	11.67 (2.58)	1.92 (1.07–3.45)			3.23 (2.21)	.64 (.14–3.00)			6.30 (1.27)	1.75 (.86–3.56)		
			4.12	.04			.35	.55			2.47	.12
Age (years)												
13–14	6.14 (1.65)	1.0			4.08 (1.30)	1.0			2.81 (.85)	1.0		
15–17	7.63 (1.15)	1.24 (.25–6.05)			5.27 (1.12)	2.12 (.30–15.20)			4.91 (1.24)	3.37 (.37–30.52)		
			.57	.45			.45	.50			2.78	.10
Grade in school												
5–8	6.59 (2.03)	1.0			5.25 (1.79)	1.0			3.93 (1.57)	1.0		
9	5.56 (1.96)	.74 (.20–2.76)			3.53 (1.48)	.48 (.09–2.42)			2.84 (1.40)	.40 (.05–3.32)		
10	10.79 (3.17)	1.35 (.22–8.38)			6.41 (2.09)	.63 (.07–5.47)			6.81 (2.35)	.61 (.05–7.20)		
11	6.56 (2.22)	.77 (.11–5.33)			4.16 (2.09)	.39 (.04–3.67)			3.92 (1.94)	.31 (.02–4.44)		
12+	4.84 (2.42)	.48 (.05–5.04)			3.94 (2.31)	.39 (.03–4.58)			1.96 (1.45)	.09 (.004–2.27)		
			.90	.44			.37	.79			1.01	.40
Annual Household Income ($)												
0–17,999	4.60 (1.46)	1.0			3.61 (1.24)	1.0			2.29 (.97)	1.0		
18,000–39,999	7.03 (2.27)	1.59 (.62–4.06)			4.48 (1 61)	1.32 (.46–3.75)			4.06 (1.53)	1.97 (.57–6.79)		
32,000–54,999	10.02 (1.93)	2.23 (.99–5.00)			7.03 (1.80)	2.13 (.79–5.78)			5.53 (1.88)	2.66 (.88–8.05)		
55,000+	6.70 (1.96)	1.61 (.66–3.90)			4.36 (1.80)	1.35 (.42–4.29)			4.53 (1.81)	2.49 (.77–8.07)		
			1.45	.23			.92	.43			.94	.42

Note. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); *SE* = standard error; *OR* = odds ratio; CI = confidence interval.
[a] Three or more lifetime attacks, with one in the past year. [b] Three or more attacks in at least 1 year of life, with one attack in the past 12 months. [c] Three or more attacks in the past year.

Table 5. *Gender and Ethnicity Comparisons Among Participants With Lifetime DSM–IV IED for Severity of Impairment in Home, School/Work, Family, and Social Contexts*

	None % (*SE*)	Mild % (*SE*)	Moderate % (*SE*)	Severe % (*SE*)	*F*	*p*
Home						
Gender					.60	.59
Male	35.57 (9.04)	15.61 (5.71)	29.94 (8.36)	18.88 (9.18)		
Female	44.86 (9.07)	23.70 (7.34)	16.33 (8.33)	15.12 (8.31)		
Ethnicity					1.15	.30
African American	37.31 (6.12)	19.54 (5.52)	27.16 (7.12)	15.99 (6.37)		
Caribbean Black	54.87 (22.21)	13.23 (5.54)	3.42 (2.02)	28.48 (24.09)		
School/Work						
Gender					.95	.41
Male	29.98 (7.78)	20.01 (8.15)	32.46 (8.74)	17.54 (8.49)		
Female	40.13 (9.69)	34.74 (12.29)	14.94 (7.69)	10.19 (4.96)		
Ethnicity					.53	.48
African American	35.25 (5.98)	23.91 (4.55)	24.67 (5.31)	16.17 (5.96)		
Caribbean Black	24.25 (13.65)	41.57 (36.63)	31.96 (23.70)	2.22 (.63)		
Family						
Gender					.09	.95
Male	33.43 (10.90)	18.88 (7.74)	21.10 (7.55)	26.59 (8.74)		
Female	37.67 (9.59)	17.83 (5.27)	23.40 (9.74)	21.10 (8.04)		
Ethnicity					1.00	.35
African American	32.46 (8.37)	19.79 (6.26)	23.93 (6.70)	23.82 (6.37)		
Caribbean Black	56.32 (22.37)	7.82 (4.72)	6.82 (3.29)	29.05 (24.02)		
Social						
Gender					1.52	.22
Male	22.84 (6.97)	29.20 (13.69)	17.30 (7.34)	30.66 (10.97)		
Female	33.54 (8.93)	40.72 (11.88)	20.75 (9.25)	5.00 (4.65)		
Ethnicity					1.42	.25
African American	28.84 (6.15)	31.03 (10.39)	20.85 (7.12)	19.28 (6.71)		
Caribbean Black	13.21 (4.78)	55.78 (22.26)	1.30 (1.29)	29.71 (23.95)		
Summary						
Gender					.51	.65
Male	7.23 (2.73)	20.12 (8.22)	28.58 (6.90)	44.06 (9.97)		
Female	13.53 (6.32)	28.63 (10.65)	20.28 (8.58)	37.57 (9.89)		
Ethnicity					2.48	.09
African American	10.96 (3.61)	18.71 (6.42)	27.55 (5.96)	42.78 (7.88)		
Caribbean Black	0 (.00)	61.78 (22.99)	7.11 (3.39)	31.11 (23.76)		

Note. $N = 70$. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); IED = intermittent explosive disorder; *SE* = standard error.

Yoshimasu et al., 2011) have investigated the potential direct relationship between IED and socioeconomic status (SES). Future studies of IED should include additional measures of SES and other risk factors to further explore potentially direct and indirect influences on the prevalence of this disorder.

Adolescent females were less likely to have a 12-month *DSM–IV* IED diagnosis than males, 5.5% compared with 8.5%, respectively. For lifetime *DSM–IV* IED, gender differences were significant; adolescent males were more likely to meet diagnostic criteria than females (12.2% vs. 6.3%, respectively). This significance remained regardless of which lifetime IED diagnostic classification system was used. These results inform the debate over gender differences in the prevalence rates of this diagnosis and support studies that find a higher proportion of males with this disorder (Al-Hamzawi et al., 2012; Coccaro, 2000; Yoshimasu et al., 2011). However, it is important to note that lifetime and 12-month prevalence rates of IED for Black American females were higher than expected.

Overall, the findings from this study indicate that IED should be considered an important factor in youth violent behavior, especially for Black American adolescent males. It may be that these episodes of aggressive behavior represent an important expression of distress for teens, and may be linked to the experience of anxiety or mood problems (Coccaro et al., 1998; Olvera et al., 2001). For example, Kashdan and colleagues (Breen & Kashdan, 2011; Kashdan & McKnight, 2010) have discussed a subset of disinhibited individuals with social anxiety disorder who exhibit risk taking, impulsivity, and hostile outbursts. Therefore, future research is necessary to disentangle IED from this form of social anxiety.

Over 40% of male participants who met criteria for lifetime *DSM–IV* IED rated the impairment caused by their anger attacks as severe, while 38% of females reported similarly high impairment. For males, the areas in their lives most affected were family and social, whereas females reported most severe impairment with their families. Importantly, participants indicated their anger attacks were least likely to be associated with severe impairment at school or work.

Table 6. *Comorbidity of DSM–IV Intermittent Explosive Disorder (12 Month and Lifetime) and Other DSM–IV Diagnoses*

	12-month IED (n = 71)		Lifetime IED (n = 92)	
Other *DSM–IV* diagnoses	% (*SE*)	*OR* (95% CI)	% (*SE*)	*OR* (95% CI)
Any mood disorder	7.07 (3.67)	1.05 (.26–4.28)	14.38 (3.81)	2.08 (.98–4.43)
Any anxiety disorder	29.47 (7.38)	2.95 (1.26–6.87)	28.92 (6.07)	1.96 (1.04–3.71)
Any disruptive behavior disorder	9.81 (4.09)	.93 (.30–2.84)	13.24 (4.93)	.68 (.23–2.01)
None	53.60 (7.75)		50.57 (7.05)	
At least one disorder	46.40 (7.75)		49.43 (7.05)	
Exactly one disorder	34.58 (8.17)		28.47 (5.63)	
Exactly two disorders	8.85 (3.25)		14.14 (4.05)	
Three or more disorders	2.98 (2.84)		6.83 (2.61)	

Note. "Any mood disorder" contains major depressive disorder, dysthymia, bipolar I, and bipolar II. "Any anxiety disorder" contains social phobia, posttraumatic stress disorder, panic disorder, agoraphobia, and generalized anxiety disorder. "Any disruptive behavior disorder" contains oppositional defiant disorder and conduct disorder. At least one or more diagnosis includes these mood, anxiety, and disruptive behavior disorders, as well as substance use disorders, anorexia, bulimia, and binge eating disorder. *DSM–IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); IED = intermittent explosive disorder; *SE* = standard error; *OR* = odds ratio; CI = confidence interval.

Examination of comorbidity associated with *DSM–IV* IED revealed individuals meeting criteria for an anxiety disorder were more than three times as likely to meet 12-month IED criteria and twice as likely to meet lifetime criteria for IED. Some researchers have suggested that rage outbursts may be a variant of panic attacks (Fava, Anderson, & Rosenbaum, 1990), while others have found that, for individuals with high levels of anger, there is a link between anger, general anxiety, and exposure to trauma (Deffenbacher, Demm, & Brandon, 1986; Nickerson, Aderka, Bryant, & Hofmann, 2012). The relationship between anxiety disorders and IED for Black youth merits further investigation, along with the trend for teens who met criteria for a mood disorder to be more likely to also meet criteria for lifetime IED. It may be that Black adolescents experiencing significant mood problems manifest behavior consistent with criteria for IED in addition to more traditional criteria for mood disorders (Fava et al., 1990; Olvera et al., 2001).

The finding that nearly 50% of participants who met either lifetime or 12-month *DSM–IV* IED criteria also met diagnostic criteria for at least one other *DSM–IV* disorder further highlights the importance of a comprehensive developmentally and culturally sensitive assessment for Black youth. In addition, given the significant prevalence and levels of impairment associated with this disorder, effective treatment for IED symptoms is clearly needed. Less than 7% of participants with lifetime *DSM–IV* IED received any type of treatment for their anger attacks, a finding consistent with Coccaro et al. (2005) and Kessler et al. (2006). While females reported that help to be effective, 60% of males did not.

Table 7. *Treatment of Participants With Lifetime DSM–IV Intermittent Explosive Disorder*

Group	% (*SE*)
Total (n = 92)	6.82 (1.72)
Gender	
Male	10.23 (2.77)
Female	.20 (.21)
Ethnicity	
African American	7.25 (1.88)
Caribbean Black	2.44 (1.84)

Note. *SE* = standard error.

Limitations of the current study include the reliance on self-report data and the utilization of the WMH-CIDI as the diagnostic instrument with young adolescents. Additional investigation of validity of this instrument with this population is needed. In general, research on IED in adolescents has been hindered by the limited awareness and controversy over the validity of this diagnosis, and the lack of a valid and reliable instrument to assess IED in youth (Olvera et al., 2001). Research on the theoretical conceptualization and diagnostic criteria for IED is warranted. It remains unclear whether the manifest behavior of rage outbursts is an example of an impulse-control problem or if it should be considered more closely linked with ADHD or with anxiety or mood symptoms for teens. Another limitation of this study is that the data were collected over a decade ago during a period when some social and economic conditions were different from today. Although more up-to-date data would be desirable, and we hope it will be available in the future. The NSAL, and its adolescent supplement, remains the largest and most detailed nationally representative sample that provides relevant information on U.S. African American and Caribbean Blacks and their experiences.

The present study revealed that IED is a significant mental health problem for African American and Caribbean Black adolescents. Both males and females experience higher-than-expected rates of this diagnosis, and very few receive effective treatment. Especially in adolescents with other disorders, clinicians and researchers need to consider this diagnosis when conducting assessments and designing interventions for Black youth. Professional training programs should incorporate education and increase awareness of this important and controversial disorder.

Keywords: intermittent explosive disorder; adolescents; African Americans; Caribbean Blacks

References

Agyemang, C., Bhopal, R., & Bruijnzeels, M. (2005). Negro, Black, Black African, African Caribbean, African American or what? Labelling African origin populations in the health arena in the 21st century. *Journal of Epidemiology and Community Health, 59,* 1014–1018. http://dx.doi.org/10.1136/jech.2005.035964

Al-Hamzawi, A., Al-Diwan, J. K., Al-Hasnawi, S. M., Taib, N. I., Chatterji, S., Hwang, I., . . . McLaughlin, K. A. (2012). The prevalence and correlates of intermittent explosive disorder in Iraq. *Acta Psychiatrica Scandinavica, 126,* 219–228. http://dx.doi.org/10.1111/j.1600-0447.2012.01855.x

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.; *DSM–III*). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.; *DSM–IV*). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.; *DSM–5*). Washington, DC: Author.

Andrews, G., & Peters, L. (1998). The psychometric properties of the Composite International Diagnostic Interview. *Social Psychiatry and Psychiatric Epidemiology, 33,* 80–88. http://dx.doi.org/10.1007/s001270050026

Breen, W. E., & Kashdan, T. B. (2011). Anger suppression after imagined rejection among individuals with social anxiety. *Journal of Anxiety Disorders, 25,* 879–887. http://dx.doi.org/10.1016/j.janxdis.2011.04.009

Bromet, E. J., Gluzman, S. F., Paniotto, V. I., Webb, C. P., Tintle, N. L., Zakhozha, V., . . . Schwartz, J. E. (2005). Epidemiology of psychiatric and alcohol disorders in Ukraine: Findings from the Ukraine World Mental Health survey. *Social Psychiatry and Psychiatric Epidemiology, 40,* 681–690. http://dx.doi.org/10.1007/s00127-005-0927-9

Chakraborty, A., & McKenzie, K. (2002). Does racial discrimination cause mental illness? *British Journal of Psychiatry, 180,* 475–477. http://dx.doi.org/10.1192/bjp.180.6.475

Coccaro, E. F. (2000). Intermittent explosive disorder. *Current Psychiatry Reports, 2,* 67–71. http://dx.doi.org/10.1007/s11920-000-0045-z

Coccaro, E. F. (2012). Intermittent explosive disorder as a disorder of impulsive aggression for *DSM–5*. *American Journal of Psychiatry, 169,* 577–588. http://dx.doi.org/10.1176/appi.ajp.2012.11081259

Coccaro, E. F., & Danehy, M. (2006). Intermittent explosive disorder. In E. Hollander & D. J. Stein (Eds.), *Clinical manual of impulse-control disorders* (pp. 19–37). Washington, DC: American Psychiatric Association.

Coccaro, E. F., Kavoussi, R. J., Berman, M. E., & Lish, J. D. (1998). Intermittent explosive disorder—revised: Development, reliability, and validity of research criteria. *Comprehensive Psychiatry, 39,* 368–376. http://dx.doi.org/10.1016/S0010-440X(98)90050-5

Coccaro, E. F., Posternak, M. A., & Zimmerman, M. (2005). Prevalence and features of intermittent explosive disorder in a clinical setting. *Journal of Clinical Psychiatry, 66,* 1221–1227. http://dx.doi.org/10.4088/JCP.v66n1003

Coccaro, E. F., Schmidt, C. A., Samuels, J. F., & Nestadt, G. (2004). Lifetime and 1-month prevalence rates of intermittent explosive disorder in a community sample. *Journal of Clinical Psychiatry, 65,* 820–824. http://dx.doi.org/10.4088/JCP.v65n0613

Deffenbacher, J. L., Demm, P. M., & Brandon, A. D. (1986). High general anger: Correlates and treatment. *Behaviour Research and Therapy, 24,* 481–489. http://dx.doi.org/10.1016/0005-7967(86)90014-8

Fava, M., Anderson, K., & Rosenbaum, J. F. (1990). "Anger attacks": Possible variants of panic and major depressive disorders. *American Journal of Psychiatry, 147,* 867–870. http://dx.doi.org/10.1176/ajp.147.7.867

Felthous, A. R., Bryant, S. G., Wingerter, C. B., & Barratt, E. (1991). The diagnosis of intermittent explosive disorder in violent men. *Bulletin of the American Academy of Psychiatry & the Law, 19,* 71–79.

Fincham, D., Grimsrud, A., Corrigall, J., Williams, D. R., Seedat, S., Stein, D. J., & Myer, L. (2009). Intermittent explosive disorder in South Africa: Prevalence, correlates and the role of traumatic exposures. *Psychopathology, 42,* 92–98. http://dx.doi.org/10.1159/000203341

Grant, J. E., Williams, K. A., & Potenza, M. N. (2007). Impulse-control disorders in adolescent psychiatric inpatients: Co-occurring disorders and sex differences. *Journal of Clinical Psychiatry, 68,* 1584–1592. http://dx.doi.org/10.4088/JCP.v68n1018

Greer, C. M. (2013). *Black ethnics: Race, immigration, and the pursuit of the American dream*. New York, NY: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199989300.001.0001

Griffith, D. M., Johnson, J. L., Zhang, R., Neighbors, H. W., & Jackson, J. S. (2011). Ethnicity, nativity, and the health of American Blacks. *Journal of Health Care for the Poor and Underserved, 22,* 142–156.

Harrison, G., Owens, D., Holton, A., Neilson, D., & Boot, D. (1988). A prospective study of severe mental disorder in Afro-Caribbean patients. *Psychological Medicine, 18,* 643–657. http://dx.doi.org/10.1017/S0033291700008321

Hosmer, D. W., Lemeshow, S., & May, S. (2008). *Applied survival analysis: Regression modeling of time to event data* (2nd ed.). New York, NY: Wiley. http://dx.doi.org/10.1002/9780470258019

Jackson, J. S., Torres, M., Caldwell, C. H., Neighbors, H. W., Nesse, R. M., Taylor, R. J., . . . Williams, D. R. (2004). The National Survey of American Life: A study of racial, ethnic and cultural influences on mental disorders and mental health. *International Journal of Methods in Psychiatric Research, 13,* 196–207. http://dx.doi.org/10.1002/mpr.177

Kaplan, E. L., & Meier, P. (1958). Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association, 53,* 457–481. http://dx.doi.org/10.1080/01621459.1958.10501452

Kashdan, T. B., & McKnight, P. E. (2010). The darker side of social anxiety: When aggressive impulsivity prevails over shy inhibition. *Current Directions in Psychological Science, 19,* 47–50. http://dx.doi.org/10.1177/0963721409359280

Kessler, R. C., Avenevoli, S., Costello, E. J., Green, J. G., Gruber, M. J., Heeringa, S., . . . Zaslavsky, A. M. (2009). National comorbidity survey replication adolescent supplement (NCS-A): II. Overview and design. *Journal of the American Academy of Child & Adolescent Psychiatry, 48,* 380–385. http://dx.doi.org/10.1097/CHI.0b013e3181999705

Kessler, R. C., Coccaro, E. F., Fava, M., Jaeger, S., Jin, R., & Walters, E. (2006). The prevalence and correlates of *DSM–IV* intermittent explosive disorder in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 63,* 669–678. http://dx.doi.org/10.1001/archpsyc.63.6.669

Kessler, R. C., Wittchen, H.-U., Abelson, J. M., Mcgonagle, K., Schwarz, N., Kendler, K. S., . . . Zhao, S. (1998). Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US national comorbidity survey (NCS). *International Journal of Methods in Psychiatric Research, 7,* 33–55. http://dx.doi.org/10.1002/mpr.33

Kulper, D. A., Kleiman, E. M., McCloskey, M. S., Berman, M. E., & Coccaro, E. F. (2015). The experience of aggressive outbursts in intermittent explosive disorder. *Psychiatry Research, 225,* 710–715. http://dx.doi.org/10.1016/j.psychres.2014.11.008

Leon, A. C., Olfson, M., Portera, L., Farber, L., & Sheehan, D. V. (1997). Assessing psychiatric impairment in primary care with the Sheehan Disability Scale. *International Journal of Psychiatry in Medicine, 27,* 93–105. http://dx.doi.org/10.2190/T8EM-C8YH-373N-1UWD

Look, A. E., McCloskey, M. S., & Coccaro, E. F. (2015). Verbal versus physical aggression in intermittent explosive disorder. *Psychiatry Research, 225,* 531–539. http://dx.doi.org/10.1016/j.psychres.2014.11.052

Mattes, J. A. (1990). Comparative effectiveness of carbamazepine and propranolol for rage outbursts. *Journal of Neuropsychiatry and Clinical Neurosciences, 2,* 159–164. http://dx.doi.org/10.1176/jnp.2.2.159

Mattes, J. A., & Fink, M. (1990). A controlled family study of adopted patients with temper outbursts. *Journal of Nervous and Mental Disease, 178,* 138–139. http://dx.doi.org/10.1097/00005053-199002000-00010

McCloskey, M. S., Berman, M. E., Noblett, K. L., & Coccaro, E. F. (2006). Intermittent explosive disorder-integrated research diagnostic criteria: Convergent and discriminant validity. *Journal of Psychiatric Research, 40,* 231–242. http://dx.doi.org/10.1016/j.jpsychires.2005.07.004

McCloskey, M. S., Kleabir, K., Berman, M. E., Chen, E. Y., & Coccaro, E. F. (2010). Unhealthy aggression: Intermittent explosive disorder and adverse physical health outcomes. *Health Psychology, 29,* 324–332. http://dx.doi.org/10.1037/a0019072

McCloskey, M. S., Noblett, K. L., Deffenbacher, J. L., Gollan, J. K., & Coccaro, E. F. (2008). Cognitive–behavioral therapy for intermittent explosive disorder: A pilot randomized clinical trial. *Journal of Consulting and Clinical Psychology, 76,* 876–886. http://dx.doi.org/10.1037/0022-006X.76.5.876

McElroy, S. L. (1999). Recognition and treatment of *DSM–IV* intermittent explosive disorder. *Journal of Clinical Psychiatry, 60*(Suppl. 15), 12–16.

McElroy, S. L., Pope, H. G., Jr., Keck, P. E., Jr., Hudson, J. I., Phillips, K. A., & Strakowski, S. M. (1996). Are impulse-control disorders related to bipolar disorder? *Comprehensive Psychiatry, 37,* 229–240. http://dx.doi.org/10.1016/S0010-440X(96)90001-2

McElroy, S. L., Soutullo, C. A., Beckman, D. A., Taylor, P., Jr., & Keck, P. E., Jr. (1998). DSM–IV intermittent explosive disorder: A report of 27 cases. *Journal of Clinical Psychiatry, 59,* 203–210. http://dx.doi.org/10.4088/JCP.v59n0411

McLaughlin, K. A., Green, J. G., Hwang, I., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2012). Intermittent explosive disorder in the National Comorbidity Survey Replication Adolescent Supplement. *JAMA Psychiatry, 69,* 1131–1139. http://dx.doi.org/10.1001/archgenpsychiatry.2012.592

Monopolis, S., & Lion, J. R. (1983). Problems in the diagnosis of intermittent explosive disorder. *American Journal of Psychiatry, 140,* 1200–1202. http://dx.doi.org/10.1176/ajp.140.9.1200

Murray-Close, D., Ostrov, J. M., Nelson, D. A., Crick, N. R., & Coccaro, E. F. (2010). Proactive, reactive, and romantic relational aggression in adulthood: Measurement, predictive validity, gender differences, and association with Intermittent Explosive Disorder. *Journal of Psychiatric Research, 44,* 393–404. http://dx.doi.org/10.1016/j.jpsychires.2009.09.005

Nickerson, A., Aderka, I. M., Bryant, R. A., & Hofmann, S. G. (2012). The relationship between childhood exposure to trauma and intermittent explosive disorder. *Psychiatry Research, 197*(1–2), 128–134. http://dx.doi.org/10.1016/j.psychres.2012.01.012

Olvera, R. L., Pliszka, S. R., Konyecsni, W. M., Hernandez, Y., Farnum, S., & Tripp, R. F. (2001). Validation of the Interview Module for Intermittent Explosive Disorder (M-IED) in children and adolescents: A pilot study. *Psychiatry Research, 101,* 259–267. http://dx.doi.org/10.1016/S0165-1781(01)00224-4

Ortega, A. N., Canino, G., & Alegria, M. (2008). Lifetime and 12-month intermittent explosive disorder in Latinos. *American Journal of Orthopsychiatry, 78,* 133–139. http://dx.doi.org/10.1037/0002-9432.78.1.133

Posternak, M. A., & Zimmerman, M. (2002). Anger and aggression in psychiatric outpatients. *Journal of Clinical Psychiatry, 63,* 665–672. http://dx.doi.org/10.4088/JCP.v63n0803

Rao, J. N. K., & Scott, A. J. (1984). On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data. *Annals of Statistics, 12,* 46–60. http://dx.doi.org/10.1214/aos/1176346391

Schmidley, A. D., & Gibson, C. (1999). *Current population reports (Series P23-195): Profile of the foreign-born population in the United States: 1997*. Washington, DC: U.S. Census Bureau.

Seaton, E. K., Caldwell, C. H., Sellers, R. M., & Jackson, J. S. (2008). The prevalence of perceived discrimination among African American and Caribbean Black youth. *Developmental Psychology, 44,* 1288–1297. http://dx.doi.org/10.1037/a0012747

Selten, J. P., Slaets, J. P., & Kahn, R. S. (1997). Schizophrenia in Surinamese and Dutch Antillean immigrants to The Netherlands: Evidence of an increased incidence. *Psychological Medicine, 27,* 807–811. http://dx.doi.org/10.1017/S0033291797005199

Sue, S., Zane, N., Nagayama Hall, G. C., & Berger, L. K. (2009). The case for cultural competency in psychotherapeutic interventions. *Annual Review of Psychology, 60,* 525–548. http://dx.doi.org/10.1146/annurev.psych.60.110707.163651

Wakefield, J. C. (2015). DSM–5, psychiatric epidemiology and the false positives problem. *Epidemiology and Psychiatric Sciences, 24,* 188–196. http://dx.doi.org/10.1017/S2045796015000116

Williams, D. R., González, B. K., Neighbors, H., Nesse, R., Abelson, J. M., Sweetman, J., & Jackson, J. S. (2007). Prevalence and distribution of major depressive disorder in African Americans, Caribbean Blacks, and non-Hispanic Whites: Results from the National Survey of American Life. *Archives of General Psychiatry, 64,* 305–315.

Williams, D. R., Haile, R., González, H. M., Neighbors, H., Baser, R., & Jackson, J. S. (2007). The mental health of Black Caribbean immigrants: Results from the National Survey of American Life. *American Journal of Public Health, 97,* 52–59. http://dx.doi.org/10.2105/AJPH.2006.088211

Williams, D. R., Lavizzo-Mourey, R., & Warren, R. C. (1994). The concept of race and health status in America. *Public Health Reports, 109,* 26–41.

Steenkamp, J. E. M., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research, 25,* 78–90. http://dx.doi.org/10.1086/209528

Yoshimasu, K., Kawakami, N., & the WMH-J 2002–2006 Survey Group. (2011). Epidemiological aspects of intermittent explosive disorder in Japan: Prevalence and psychosocial comorbidity: Findings from the World Mental Health Japan Survey 2002–2006. *Psychiatry Research, 186*(2–3), 384–389. http://dx.doi.org/10.1016/j.psychres.2010.07.018