

# Validity of the new A<sub>1</sub> and A<sub>2</sub> criteria for DSM-5 intermittent explosive disorder

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## Abstract

A disorder of impulsive aggression has been in the Diagnostic and Statistical Manual for Mental Disorders (DSM) since the first edition. In DSM-III, this disorder was codified as Intermittent Explosive Disorder (IED) and was thought to be rare. However, DSM criteria for IED were poorly operationalized and empiric research in IED was limited until the past decade when research criteria were developed. Subsequently, renewed interest in disorders of impulsive aggression led to a recent series of community based studies that have now documented IED to be as common as many other psychiatric disorders. Recent research indicates that the core of IED (A criteria) can be captured with new criteria that identify high frequency/low intensity aggressive outbursts (A<sub>1</sub>) and low frequency/high intensity outbursts (A<sub>2</sub>). This paper presents new data regarding the phenomenology, comorbidity/life course of IED as a function of A<sub>1</sub> and A<sub>2</sub> criteria. Together with reanalysis of previously published data regarding family history, biomarkers, and treatment response in individuals with recurrent, problematic, impulsive aggression, these data provide empirical support for both A<sub>1</sub> and A<sub>2</sub> criteria for DSM-5 IED.

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## 1. Introduction

The construct for Intermittent Explosive Disorder (IED) has been in the Diagnostic and Statistical Manual of Mental Disorders (DSM) from its first edition in 1956 [1]. In DSM-I and DSM-II, excessive reactivity to threat/environmental pressures was at the core of this disorder construct. In DSM I, this disorder was called “Passive–Aggressive Personality (Aggressive Type)” and was characterized as “*persistent reaction to frustration with irritability, temper tantrums and destructive behavior*”. In DSM-II, this disorder became “Explosive Personality” in DSM-II (1968) and such individuals were characterized as “*aggressive individuals*” who displayed “*intermittently violent behavior*” and who were “*generally excitable, aggressive, and over-responsive to environmental pressures*” with “*gross outbursts of rage or of verbal or physical aggressiveness different from their*

*usual behavior.*” Despite these vivid descriptions, little empiric data existed on either “Passive–Aggressive Personality (Aggressive Type)” or on “Explosive Personality”. This was also the case when DSM-III and DSM-IV Work Groups drew up, and then revised, operational criteria for IED, later, in the 1970s and 1990s, respectively.

In 1980, the DSM-III Work Group changed the name of Explosive Personality to IED and assigned it to the “Impulse Control Disorders” (ICD) section. DSM-III’s IED Workgroup focused on “low-frequency/high intensity” aggressive acts that were “out of character” for the individual and not associated with “generalized aggression and impulsivity” in between aggressive outbursts. DSM-III conceptualized IED as a “Jekyll and Hyde” type behavioral disorder where an otherwise normal, well behaved, person abruptly goes from being “mild-mannered” to being a “full of rage” and then, back to being “mild-mannered”, as if nothing had happened. The members of the IED Work Group were clinical psychiatrists who were highly influenced by the hypothesis that intermittently aggressive individuals had a “limbic seizure-like” disorder referred to as “Episodic Dyscontrol” [2], a hypothesis that has not been supported by empiric data. Ultimately, DSM-III (and DSM-III-R) criteria were found to

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be problematic because very few individuals with recurrent, problematic, aggression could actually be given a diagnosis of IED. This was because the “C” criteria in DSM-III/III-R excluded people who were “*generally impulsive or aggressive*” in between the “aggressive outbursts”. The report that led to this conclusion [3] was one of the very few empirical studies on IED until the late 1990s.

The next edition of the DSM (DSM-IV) made two changes to the IED Criteria Set in 1994 [4]. The first was to remove the “C” criterion from DSM-III/III-R that excluded an IED diagnosis in those individuals with “*generalized aggression and impulsivity*” because of the realization that DSM-III/III-R criteria could not properly identify individuals with recurrent, problematic, aggressive behavior (whether or not it was impulsive in nature) [3]. The second was to relax the exclusion criteria so that IED could be diagnosed in the presence of other disorders as long as the aggression seen in the subject was not fully explained by the presence of a comorbid disorder. This change was DSM-IV wide and reflected the realization that as long as psychopathology was not solely due to a comorbid disorder the DSM-IV diagnosis in question could be made.

Over the course of time, during the DSM-III/III-R/DSM-IV eras, investigators studying the biology and treatment of aggression demonstrated inverse correlations between measures of central serotonin (5-HT) and aggression, impulsivity, and irritability [5]. This work led to treatment trials with SSRIs that demonstrated that SSRIs could reduce impulsive aggressive behavior in aggressive individuals (who would now be called IED) [6]. Two important empiric insights came from this data-driven work. First, IED subjects have “high frequency/low intensity” impulsive aggressive outbursts alone, or in addition to, the “low frequency/high intensity” impulsive aggressive outbursts characteristic of the “A Criterion” for DSM-IV IED [7]. Second, it was just these “high frequency/low intensity” impulsive aggressive outbursts that responded to SSRI and to CBT treatment with a reduction in the number and severity of impulsive aggressive outbursts [6,8,9]. This did not mean that “low frequency/high intensity” aggressive outbursts do not, ultimately, respond to these treatments but, simply, that the frequency of these behaviors is too low to see sufficient change in 8–12 week clinical trials.

This psychobiologic and treatment response work led to the development of Research Criteria that aimed to clarify the nature of IED so that it would more accurately describe, and categorize, individuals with recurrent, impulsive aggressive behavior that was associated with significant distress and/or impairment [1,7]. Unlike other attempts to craft criteria for IED, this work was based on empiric data. In addition, Research Criteria went back to DSM’s “roots” to conceptualize IED as a disorder in which *excessive reactivity to threat/environmental stimuli/pressures is expressed by aggressive behavior*. Aggressive behavior, in fact, includes all forms of aggression ranging from verbal assault (e.g., screaming or verbal arguments), non-damaging/non-destructive physical aggression to objects (e.g., throwing things

around, slamming doors), animals or other individuals (e.g., physical assault *without* injury), to damaging/destructive physical aggression against objects (e.g., breaking things) or animals or other individuals (e.g., physical assault *with* injury). This conceptualization is consistent with findings reported in the biology and treatment of impulsive aggression in human and animal studies [10].

Based on this work, the framers of Research Criteria posited that recurrent, problematic, impulsive aggression was *not due* to the presence of a “limbic seizure-like” focus in the brain, as posited by the DSM-III/III-R criteria *but was due* to abnormalities in central neurotransmitter function (e.g., low 5-HT associated with disinhibition of aggressive impulses) and imbalance of inhibitory (e.g., orbitofrontal cortex) and excitatory (e.g., amygdala) neuronal systems that underlie the type of recurrent, problematic, impulsive aggression [11] present in the community [12–14] and in clinical settings [7,15].

The most recent version of Research Criteria for IED divided the A criterion into A<sub>1</sub> (high frequency/low intensity) and A<sub>2</sub> (low frequency/high intensity) criteria to document the nature of the aggressive behavior, and time frame, of aggressive behaviors in order to further operationalize the core feature of IED based on empiric data [7]. While the A<sub>1</sub> criterion was not part of the formal diagnostic criteria in DSM-IV, “high frequency/low intensity” aggressive outbursts were acknowledged as an “associated feature” of IED in the Text-Revision of DSM-IV [16]. Thus the formal creation of an A<sub>1</sub> and A<sub>2</sub> criteria brings this out of the text into the diagnostic criteria for IED.

This paper focuses on the empirical data that support the creation of A<sub>1</sub> and A<sub>2</sub> criteria for DSM-5 IED. We hypothesized the following: a) A<sub>1</sub> and A<sub>2</sub> criteria are both characteristic of most individuals with IED; b) IED subjects with *only* A<sub>1</sub> aggressive outbursts are little, if no, different than individuals with *only* A<sub>2</sub> aggressive outbursts, c) IED subjects with only A<sub>1</sub> aggressive outbursts are little, or no, different than individuals with *both* A<sub>1</sub> and A<sub>2</sub> aggressive outbursts and, d) IED subject with *only* A<sub>1</sub> aggressive outbursts are significantly different than “controls” in terms of levels of aggression, anger, impulsivity, psychosocial function, family history of aggression, biomarkers, and treatment response.

## 2. Methods

### 2.1. Subjects

Nine-hundred and three, new, physically healthy subjects participated in the phenomenological aspect of this study. In addition, a total of one-hundred-fifty-six, non-overlapping, subjects participated in previously published studies of family history [17], biomarkers [10,18], and treatment response [8,9] in IED that were re-analyzed for this paper.

All subjects were systematically evaluated in regard to impulsive aggressive and other personality-related behaviors

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