



Emotional intelligence and impulsive aggression in Intermittent Explosive Disorder



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ABSTRACT

Emotional intelligence (EI) relates to one's ability to recognize and understand emotional information and then, to use it for planning and self-management. Given evidence of abnormalities of emotional processing in impulsively aggressive individuals, we hypothesized that EI would be reduced in subjects with Intermittent Explosive Disorder (IED: $n = 43$) compared with healthy ($n = 44$) and psychiatric ($n = 44$) controls. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) was used to assess both Experiential EI and Strategic EI. Strategic, but not Experiential, EI was lower in IED compared with control subjects. These differences were not accounted for demographic characteristics, cognitive intelligence, or the presence of clinical syndromes or personality disorder. In contrast, the relationship between IED and Strategic EI was fully accounted for by a dimension of hostile cognition defined by hostile attribution and hostile automatic thoughts. Interventions targeted at improving Strategic EI and reducing hostile cognition will be key to reducing aggressive behavior in individuals with IED.

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1. Introduction

Intermittent Explosive Disorder (IED), as defined in DSM-5, is characterized by recurrent, problematic, impulsive aggressive behavior (Coccaro, 2012). Aggression in IED may be displayed as high frequency/low intensity aggression that is non-destructive or injurious, or as low frequency/high intensity aggression that is destructive and/or injurious. However expressed, the aggression is impulsive, and/or anger-based, in nature. Based on data analyzed for the DSM-5 Task Force, about 70% of individuals with IED display both forms of impulsive aggression while 20% display only the high frequency/low intensity aggression, and 10% display only the low frequency/high intensity aggression (Coccaro et al., 2014). Aggressive behavior in IED is most often provoked in social interactions. It is of interest then that individuals with IED demonstrate hostile cognitive distortions such as hostile automatic thoughts and hostile attribution bias, both of which render individuals with IED vulnerable to misinterpreting non-threatening social-emotional

cues as potentially threatening, and responding inappropriately (Coccaro et al., 2009).

In addition to social cognition, affective processes likely shape aggressive responding. We have previously reported that the more hostile an individual believes another person is in the interaction, the more anger is reported by the individual (Coccaro et al., 2009). Previous work examining neurobiological factors confirm that IED individuals are predisposed to having exaggerated responses to social and emotional stimuli. The functional activity of cortico-limbic structures such as the amygdala is exaggerated in response to angry face stimuli in individuals with IED (Coccaro et al., 2011). Depletion of central serotonin with tryptophan depletion has been found to alter perception of angry faces and increase subjective angry mood in males with IED (Lee et al., 2012).

While previous work has focused specifically on cognitive factors like hostility and emotional factors like anger, work in the area of emotional intelligence (EI) integrates social and emotional processes more broadly. Currently, there are two basic models of emotional intelligence: the “trait” model and the “ability” model. The trait model, developed by Petrides (Petrides et al., 2007), posits emotional intelligence as a set of self-perceptions of emotions in the context of personality. In contrast, the ability model (Mayer and Salovey 1993) focuses on one's ability to perceive emotion, use emotions, understand emotions, and manage emotions. In the

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ability model, EI hypothesizes that emotional knowledge is embedded within a social context of communication and interaction and entails the ability to recognize emotions in ourselves and others. Coping with stressful events requires skill in the ability to attend, understand and label, communicate, and modulate emotions. These emotion processing competencies enable one to utilize emotional information adaptively in a variety of social situations. Individuals high in EI use these emotional skills in a manner that potentially benefits themselves and others. EI consists of multiple dimensions, including the inclination to pay attention to one's feelings, have clarity in discriminating, and in repairing, dysphoric mood states.

Given our interest in the ability of aggressive individuals to use and manage emotions, we chose a measure that assessed one's "ability" to navigate in social-emotional situations. For the "ability model", the most widely used measure is the Meyer, Caruso, Salovey Emotional Intelligence Test (MCSEIT; Mayer et al., 2007). The MCSEIT displays content (Tucker and Riggio, 1988), structural (Ciarrochi et al., 2000), discriminant (Brackett and Mayer, 2003) and predictive (Lopes et al., 2003, 2004) validity. In this study, we used the MCSEIT to assess Experiential EI and Strategic EI. Experiential EI provides an index of the subject's ability to perceive emotional information, to relate it to other sensations such as color and taste, and to use it to facilitate thought. Strategic EI provides an index of the subject's ability to understand emotional information and use it strategically for planning and self-management. We hypothesized that both Experiential EI and Strategic EI would be lower in individuals with IED and that both forms of EI would correlate inversely with aggression and with measure of hostile cognition.

2. Methods

2.1. Subjects

One-hundred thirty-six physically healthy subjects participated in this study. All subjects were medically healthy and were systematically evaluated in regard to aggressive, and other, behaviors as part of a larger program designed to study correlates of impulsive aggressive, and other personality-related, behaviors in human subjects. Subjects were recruited through public service announcements and newspaper advertisements seeking out individuals who: a) reported psychosocial difficulty related to one or more Axis I and Axis II conditions (Axis I/II subjects) or, b) had little evidence of psychopathology (Normal Control subjects). All subjects gave informed consent and signed the informed consent document approved by our Committee for the Protection of Human Subjects (IRB).

2.2. Diagnostic assessment

Syndromal and personality disorder diagnoses were made according to DSM-5 criteria (American Psychiatric Association, 2013). Diagnoses were made using information from: (a) the Structured Clinical Interview for DSM Diagnoses [SCID-I; (First et al., 1997)] for syndromal disorders and the Structured Interview for the Diagnosis of DSM Personality Disorder [SIDP; (Pfohl et al., 1997)] for personality disorders; (b) clinical interview by a research psychiatrist; and, (c) review of all other available clinical data. The research diagnostic interviews were conducted by individuals with a masters or doctorate degree in Clinical Psychology. All diagnostic raters went through a rigorous training program that included lectures on DSM diagnoses and rating systems, videos of expert raters conducting SCID/SIDP interviews, and practice interviews and ratings until the rater were deemed reliable with the trainer. This process resulted in

good to excellent inter-rater reliabilities (mean kappa of $.84 \pm .05$; range: $.79$ to $.93$) across anxiety, mood, substance use, impulse control, and personality disorders. Final diagnoses were assigned by team best-estimate consensus procedures (Kosten and Rounsaville, 1992; Leckman et al., 1982) involving research psychiatrists and clinical psychologists as previously described (Coccaro et al., 2012). This methodology has previously been shown to enhance the accuracy of diagnosis over direct interview alone (Klein et al., 1994). Subjects with a current history of a substance use disorder or of a life history of bipolar disorder, schizophrenia (or other psychotic disorder), or mental retardation, were excluded from study. Medical health of all subjects was documented by medical history and examination, and urine screen for illicit drugs.

Syndromal and personality disorder diagnoses are listed in Table 1. Of the 87 subjects with DSM-5 diagnoses, most (69%) reported: a) history of formal psychiatric evaluation and/or treatment (53%) or, b) history of behavioral disturbance during which the subject, or others, thought they should have sought mental health services but did not (16%).

2.3. Assessment of emotional and cognitive intelligence

Emotional intelligence (EI) was assessed using the Mayer-Salovey-Caruso Emotional Intelligence Test [MSCEIT; (Mayer et al., 2007)]. The MSCEIT yields two main scores for experiential EI and strategic EI. In this context, EI is defined as the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to regulate emotions so as to promote emotional and intellectual growth (Mayer et al., 2001). Experiential EI provides an index of the subject's ability to perceive emotional information, to relate it to other sensations such as color and taste, and to use it to facilitate thought. Strategic EI provides an index of the subject's ability to understand emotional information and use it strategically for planning and self-management. The scores underlying Experiential EI relate to perceiving emotions and facilitating thought. The

Table 1
Syndromal and personality disorder diagnoses in PC/IED subjects.

	PC (n = 44)	IED (N = 43)
Current Syndromal Disorders:		
Intermittent Explosive Disorder	0 (0.0%)	31 (72.1%)
Any Depressive Disorder	4 (9.3%)	6 (14.0%)
Any Anxiety Disorder	12 (27.3%)	7 (16.3%)
Any Substance Use Disorder	0 (0.0%)	0 (0.0%)
Any Stress and Trauma Disorder	4 (9.3%)	7 (16.3%)
Any Eating Disorder	0 (0.0%)	3 (7.0%)
Any Obsessive-Compulsive Disorder	0 (0.0%)	1 (2.3%)
Any Somatoform Disorder	0 (0.0%)	1 (2.3%)
Non-IED Impulse Control Disorder	0 (0.0%)	1 (2.3%)
Lifetime Syndromal Disorders:		
Intermittent Explosive Disorder	0 (0.0%)	43 (100.0%)
Any Depressive Disorder	16 (37.2%)	25 (58.1%)
Any Anxiety Disorder	15 (34.5%)	10 (23.2%)
Any Substance Use Disorder	10 (22.7%)	16 (37.2%)
Any Stress and Trauma Disorder	8 (19.6%)	9 (20.9%)
Any Eating Disorder	4 (9.3%)	6 (14.0%)
Any Obsessive-Compulsive Disorder	1 (2.3%)	3 (7.0%)
Any Somatoform Disorder	0 (0.0%)	1 (2.3%)
Non-IED Impulse Control Disorder	0 (0.0%)	3 (4.5%)
Personality Disorders:		
Any Personality Disorder	16 (37.2%)	34 (79.1%)
Specific Personality Disorder	10 (22.7%)	17 (40.0%)
Cluster A (Odd)	2 (4.7%)	5 (11.6%)
Cluster B (Dramatic)	4 (9.3%)	11 (25.6%)
Cluster C (Anxious)	7 (16.3%)	6 (14.0%)
PD-NOS	6 (13.6%)	17 (40.0%)

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