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The relationship between decision-making and perfectionism in obsessive-compulsive disorder and eating disorders

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ABSTRACT

Background and objectives: Obsessive-compulsive disorder (OCD) and eating disorders (EDs) show phenotypic similarities and have been independently associated with deficits in decision-making and maladaptive perfectionism. However, research directly comparing the two disorders is sparse and the significance of observed similarities remains in question. Therefore, the present study compared decision-making in OCD and EDs in relationship to perfectionistic personality traits.
Methods: Sixty-one women were enrolled in the study comprising 3 mutually exclusive groups: 19 with OCD, 17 with EDs, and 21 healthy controls. Decision-making performance on the Iowa Gambling Task under two conditions, ambiguity and risk, was examined in relationship to perfectionistic traits.
Results: Behavioral results indicated that EDs participants, relative to both OCD and control participants, were impaired in decision-making under conditions of risk. Heightened perfectionism was associated with less risky decision-making in OCD, but more risky decision-making in EDs.
Limitations: Sample size was small and all participants were women, which may limit generalizability.
Conclusion: Results support decision-making deficits in EDs, which may be related to a dysfunctional determination of risk versus reward. This study is the first to suggest that the relationship between perfectionism and risk taking may manifest differently in these phenotypically similar disorders.

1. Introduction

Research investigating the association between obsessive-compulsive disorder (OCD) and eating disorders (EDs) has highlighted phenomenological and functional similarities between the two disorders (Hollander, Friedberg, Wasserman, Yeh, & Iyengar, 2005; Murphy, Nutzinger, Paul, & Leplow, 2004). Obsessive-compulsive disorder and EDs involve a range of ritualistic behaviors motivated by obsessional anxiety and perceived catastrophic outcomes should such behaviors not be completed (Altman & Shankman, 2009; Lawson, Waller, & Lockwood, 2007; Rachman & Hodgson, 1980). Researchers have noted the affective regulatory similarities between OCD compulsions (e.g., hand washing, ordering and arranging, checking), and the compensatory and/or ritualistic behavior (e.g., binging, purging, body checking, compulsive exercise) in EDs (Altman & Shankman, 2009).

Parallel investigations in OCD and EDs have highlighted decision-making deficits as potential vulnerability markers of the disorders with researchers suggesting that the ritualistic behaviors result from a detrimental sensitivity to immediate reward without appropriate consideration to long-term consequences of such behavior (Altman & Shankman, 2009; Cavedini et al., 2002). Indeed, dysfunction in the brain's reward system has been implicated in OCD and binge and/or purge EDs (Cavedini, Gorini, & Bellodi, 2006; Schafer, Vaitl, & Schienle, 2010), which may explain the reinforcing efficacy of both ritualistic behavior and compensatory ED behaviors. Such deficits in decision-making may provide an endophenotype, or an intermediate marker of brain dysfunction, that could lend further clarification to the classification of and relationship between OCD and EDs.

However, neuropsychological investigations on decision-making have only lent partial support for this hypothesis with some investigations highlighting impairments in task performance in both OCD and EDs (Boeka & Lokken, 2006; Cavedini et al., 2004; Cavedini et al., 2002; Garrido & Subira, in press; Svaldi, Brand, & Tuschen-Caffier, 2010) and others reporting intact performance

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(Guillaume et al., 2010; Nielen, Veltman, De Jong, Mulder, & Den Boer, 2002). Conflicting findings in both populations may, in part, be due to varying degrees of ambiguity in decision-making paradigms. Recent research highlights two types of decisions, the first under conditions of ambiguity that relies upon implicit learning mechanisms based on previous feedback and the second under risk conditions that relies upon the ability to accurately calculate the probability of risk versus reward (Bechara, 2004). The former is associated with working memory and the latter with emotional processing (Bechara, 2004; Brand, Labudda, & Markowitsch, 2006). Ritualistic behavior in OCD and EDs may be differentially associated with the type of decision, with greater association to situations relying on the processing of reward.

At the same time, decision-making performance may be moderated by personality traits, such as perfectionism. Research examining the relationship between perfectionism and decision-making has highlighted the role of perfectionism in situations when risk contingencies are both known and high (Brand & Altstotter-Gleich, 2008). Indeed Brand and Altstotter-Gleich (2008) observed that concern over mistakes increases performance on laboratory-based decision-making tasks in healthy participants under conditions of risk but not under ones of ambiguity. The relationship of perfectionism to decision-making may be of particular importance to OCD and EDs as researchers have argued that perfectionism is a shared underlying vulnerability to both disorders (Altman & Shankman, 2009). Perfectionistic traits of concern over mistakes and doubts about actions have shown consistent elevation in both disorders (Bulik et al., 2003; Frost & Steketee, 1997; Lee et al., 2009; Sassaroli, Gallucci, & Ruggiero, 2008; Sassaroli, Lauro, et al., 2008), but to our knowledge have not been studied in relationship to decision-making performance in OCD and EDs.

The purpose of the current investigation was to investigate the relationship between decision-making performance and perfectionism in OCD and EDs characterized primarily by ritualistic binge and/or purging behavior. Using the Iowa Gambling Task (IGT) individuals with OCD, EDs and matched healthy controls initially selected cards with rules for gains and losses not explicitly explained and later, as learning from feedback proceeds, on the basis of the contingencies of the task. At the behavioral level, we expected that both clinical groups would be impaired on the IGT relative to controls and evidence more disadvantageous decision-making as the task progressed. Further, we hypothesized that perfectionism would be positively associated with decision-making performance under conditions of risk, but not under conditions of ambiguity.

2. Methods

2.1. Participants

The study was approved by the Institutional Review Board at Boston University and all participants provided written, informed consent before participating. Obsessive-compulsive disorder ($n = 19$) and ED ($n = 17$) participants were recruited through the Eating Disorders and Adult Anxiety Disorders Programs at the Center for Anxiety and Related Disorders at Boston University. Diagnoses were made based on *DSM-IV* criteria using the Mini-International Neuropsychiatric Inventory (M.I.N.I.; Sheehan et al., 1998). Severity of obsessive and compulsive symptoms was assessed using the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) and Symptom Checklist (Goodman et al., 1989) and ED severity was assessed using the Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Bèglin, 1994). Due to our focus on ritualistic (binge and/or purge) behaviors as well as the potential confounding effects of malnutrition on neuropsychological task performance (Kingston, Szmukler, Andrewes, Tress, & Desmond, 1996), the ED sample was limited to individuals with bulimia nervosa (BN; $n = 12$) or eating disorder not otherwise specified (EDNOS; $n = 5$) with a symptom presentation characterized by binge eating and/or purging at a frequency less than required for full-syndrome diagnosis. Consistent with convergent research evidence suggesting that individuals with EDNOS are equally as severe as their full syndrome counterparts (Agras, Crow, Mitchell, Halmi, & Bryson, 2009), there were no significant differences between BN and EDNOS participants in eating disorder symptoms (EDE-Q score), disorder onset or duration. The OCD group was limited to individuals with non-hoarding symptom presentations. Compulsive hoarding was excluded because of distinct differences in neuropsychological functioning relative to other OCD symptom dimensions (Grisham, Brown, Savage, Steketee, & Barlow, 2007) and research supporting the separation of hoarding from OCD in DSM-5 (Mataix-Cols et al., 2010). To reduce overlap between the two clinical groups, 4 women reporting lifetime history of both disorders were excluded. Other exclusion criteria included current or lifetime diagnosis of psychotic disorder, bipolar disorder, or substance dependence, and reported history of traumatic brain injury or neurological disease. Eight of the clinical participants were taking psychiatric medication, including antidepressants ($n = 6$), anxiolytics ($n = 2$), and atypical neuroleptics ($n = 1$).

Healthy control participants were recruited through advertisements and were healthy females without a lifetime diagnosis of a psychiatric illness on the M.I.N.I who were within a normal weight range and not taking any psychiatric medication. All participants were female and native English speakers. The three groups were matched for age, handedness, education level, and general intellectual ability as measured by the National Adult Reading Test (Blair & Spreen, 1989) and all participants completed the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996) as a measure of depressive symptoms.

2.2. Measures and task

2.2.1. Perfectionism

Perfectionism was assessed with the 35-item self-report Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990). The FMPS measures 6 aspects of perfectionism: concern over mistakes, personal standards, parental expectations, parental criticism, doubts about actions, and organization. The FMPS has shown moderate to excellent convergent and discriminate validity (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Frost et al., 1990). In this investigation, the primary focus was on concern over mistakes and doubts about action subscales, given prior associations between these two subscales and OCD and ED psychopathology (Bulik et al., 2003; Frost & Steketee, 1997). Internal consistencyreliabilities in this sample are .91 (concern over mistakes), and .82 (doubts about actions).

2.2.2. Decision-making

Decision-making was assessed using a computerized version of the IGT (Bechara, Damasio, Damasio, & Anderson, 1994). The IGT involves four decks of 100 cards, decks A, B, C and D. Each time a participant selects a card a specified amount of facsimile money is awarded. However, interspersed amongst these rewards at certain times are punishments (monetary losses at different fixed amounts). Two of the decks of cards, decks A and B, produce high immediate financial gains, however, are disadvantageous in the long run. The other two decks, C and D, are considered advantageous, as they result in small, immediate gains, but will reward more money than they take in the long run. Participants are free to switch from any deck to another at any time. Initially, performance