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Gender differences in the relationship between impulsivity and disordered eating behaviors and attitudes

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ABSTRACT

Objective: We investigated relationships among gender, impulsivity and disordered eating in healthy college students.
Method: Participants ($N = 1223$) were healthy, undergraduate men (28.5%) and women (71.5%), who completed the Barratt Impulsiveness Scale — Version 11 (BIS-11) and a four-factor version of the Eating Attitudes Test (EAT-16).
Results: As predicted, mean scores on all four EAT-16 factors were significantly higher for women than for men. Attentional impulsivity was related to poorer self-perception of body shape, more dieting, and a greater preoccupation with food for the sample as a whole. Moreover, motor impulsivity was related to poorer self-perceptions of body shape and a greater preoccupation with food. However, no gender differences emerged in the relationship between impulsivity and disordered eating attitudes.
Discussion: This study elucidates the role of impulsivity in disordered eating behaviors among non-clinical college students. For both women and men, attentional and motor impulsivity were related to disordered eating attitudes and behaviors. Overall, these findings suggest that different facets of impulsivity are related to disordered eating attitudes and behaviors in a non-clinical college population.

1. Introduction

Disordered eating behaviors are highly prevalent among college-aged individuals, placing them at-risk for eating disorders (Krahn, Kurth, Gomberg, & Drewnowski, 2005). It is therefore important to understand which factors contribute to the likelihood of developing disordered eating behaviors. One such risk factor may be impulsivity, a multi-faceted trait marked by motor, non-planning, and attentional impulsiveness (Depue & Collins, 1999). Much research with clinical populations implicates impulsivity in eating disordered behaviors (e.g., Beck, Smits, Claes, Vandereycken, & Bijttebier, 2009; Casper, Hedeker, & McClough, 1992; Engel et al., 2005), though there are exceptions (e.g., Wonderlich, Connolly, & Stice, 2004). Most research with clinical populations suggests that individuals classified with binge eating disorder (BED) traits are more likely to be impulsive than those classified as exhibiting anorexia nervosa (AN) traits (Beck et al., 2009; Casper et al., 1992; Claes, Vandereyeken, & Vertommen, 2002). However, others have found elevated levels of impulsivity among all eating disordered subtypes, suggesting that impulsivity is a common underlying factor associated with disordered eating, in general (Claes, Robinson, Muehlenkamp, Vandereycken, & Bijttebier, 2010).

Though research with clinical populations is important, there is a need for greater focus on sub- and non-clinical populations in order to identify characteristics that place individuals at-risk and to prevent clinical eating disorders from developing. If impulsivity can be regarded as a risk factor for clinical eating disorders, a relationship between impulsivity and disordered eating behaviors should be found and replicated in non-clinical populations. Moreover, sub-threshold eating problems often persist beyond college and into later adulthood, providing further support for examining potential risk factors in college populations (Arriaza & Mann, 2001). To date, the role of impulsivity in disordered eating behaviors in sub- or non-clinical populations is not well-established. Lyke and Spinella (2004) found significant correlations between motor and attentional impulsivity and disinhibited eating, as well as between attentional impulsivity and feelings of hunger. Others have also found general impulsive traits to relate to disordered eating behaviors and thoughts in non-clinical populations (Cooper, O'Shea, Atkinson, & Wade, 2014; Fischer, Smith, & Anderson, 2003; Guerrieri, Nederkoorn, & Jansen, 2007; Leitch, Morgan, & Yeomans, 2013), though again, there are exceptions (e.g., Cooley, Toray, Valdez, & Tee, 2007).

Importantly, only one study examining impulsivity and eating behaviors in non-clinical populations included men (Lyke & Spinella, 2004), and this study did not examine gender differences. Though

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disordered eating behaviors and attitudes are more prevalent among women than men throughout childhood, adolescence and adulthood (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011), this does not imply that men are immune to developing disordered eating behaviors (Hoerr, Bokram, Lugo, Bivins, & Keast, 2002). However, the manner in which men and women manifest disordered eating behaviors differs. For example, women are more likely to report dieting or purging than men, but may be equally (or even less) likely than men to report exercising excessively or binging (Anderson & Bulik, 2004; Grucza, Przybeck, & Cloninger, 2007; Guidi et al., 2009; Striegel-Moore et al., 2009). Another study found that women experienced disordered eating at greater rates, but that men's disordered eating was more persistent over time (Keel, Baxter, Heatherton, & Joiner, 2007). Thus, while research is beginning to elucidate gender differences in disordered eating behaviors, a thorough examination of gender disparities in disordered eating behaviors and attitudes among a general undergraduate population is currently lacking.

Moreover, there are important gender differences in impulsivity that could further complicate the relationship between impulsivity and disordered eating behaviors. In general, men exhibit more impulsivity than women (Cross, Copping, & Campbell, 2011). For instance, men tend to have a greater difficulty focusing their attention and considering the future (non-planning), and are more apt to sensation-seeking and risk-taking than women (Cross et al., 2011). Given these differences, it is plausible that gender differences may exist in the relationship between impulsivity and eating disordered attitudes and behaviors.

The purpose of the current study was to examine gender differences in: (1) disordered eating behaviors and attitudes; and (2) the relationship between impulsivity (i.e., non-planning, attentional, and motor impulsivity) and disordered eating behaviors and attitudes. Regarding the first aim, we hypothesized that men would report disordered eating behaviors and attitudes, though to a lesser degree than women. Regarding the second aim, we hypothesized that greater impulsivity (i.e., non-planning, attentional, and motor) would be associated with poorer self-perception of body shape and greater dieting, food preoccupation, and awareness of food contents among both men and women. We had no priori hypotheses regarding gender differences in these relationships, but rather, sought to describe any gender differences that emerged.

2. Methods

2.1. Participants and procedures

Undergraduate students ($N = 1223$) from a Midwestern university were recruited using the Psychology Department's online subject pool system where students were provided a brief description of the study and an opportunity to sign up for participation. Participants completed several questionnaires using MediaLab v2006.1.25 by Empirisoft Corporation (New York, NY) on a Dell Optiplex GX520 desktop computer via a Windows XP platform and received course credit. All participants gave written informed consent and the university institutional review board approved the study. No inclusion or exclusion criteria were employed, except that participants were required to be at least 19 years old. See Table 1 for a summary of sample characteristics. One percent of the participants had missing data and were therefore not included in the analyses, resulting in a final N of 1208.

Table 1
Sample characteristics.

Variable		Mean (SD) or frequency (%)
Age		20.54 (3.31)
Gender	Men	349 (28.5%)
	Women	874 (71.5%)
Race	White	1075 (87.9%)
	Hispanic/Latino	62 (5.1%)
	Black or African-American	60 (4.9%)
	American-Indian	13 (1.1%)
	Asian-American	66 (5.4%)
	Native Hawaiian/Pacific Islander	6 (0.5%)
EAT-16	Self-perception	2.69 (2.64)
	Dieting	2.94 (2.96)
	Awareness	2.18 (2.28)
	Food preoccupation	1.54 (2.30)
BIS-11	Motor	21.35 (3.90)
	Attentional	16.21 (3.91)
	Non-planning	22.29 (4.86)

2.2. Measures

2.2.1. Barratt Impulsiveness Scale — Version 11 (BIS-11)

The BIS-11 is a widely used 30-item questionnaire that assesses levels of impulsivity (Patton & Stanford, 1995). Items are measured on a 4-point Likert-type scale (1 = *rarely/never* to 4 = *almost always*). Items comprise a total score and three subscales: motor impulsiveness (e.g., "*I do things without thinking*") (score ranging from 8 to 44), attentional impulsiveness (e.g., "*I am a careful thinker*" — reverse scored) (score ranging from 8 to 32), and non-planning impulsiveness (e.g., "*I plan for the future*" — reverse scored) (score ranging from 8 to 44). Higher scores on the BIS-11 indicate higher levels of impulsivity. This measure has demonstrated acceptable internal consistency and validity (Patton & Stanford, 1995; Stanford, Greve, Boudreaux, Mathias, & Brumbelow, 1996). Alpha coefficients for the current sample for motor, attentional and non-planning impulsiveness subscales were 0.63, 0.74, and 0.73, respectively.

2.2.2. Eating Attitudes Test — 26 (EAT-26)

The EAT-26 is a 26-item questionnaire that measures characteristics and concerns of eating disorders (Garner, Olmsted, Bohr, & Garfinkel, 1982). Items are measured on a 4-point scale (0 = *never/rarely* to 3 = *always*). Four subscales using 16 of the 26 items (i.e., EAT-16) have been shown to accurately measure the behaviors of interest and were thus used for these analyses: self-perception of body shape (e.g. "*I am terrified about being overweight*") (score ranging 0 to 9), dieting (e.g., "*I engage in dieting behavior*") (score ranging 0 to 15 awareness of food contents) (e.g., "*I avoid foods with sugar in them*") (score ranging 0 to 12), and food preoccupation (e.g., "*I feel that food controls my life*") (score ranging 0 to 12; Ocker, Lam, Jensen, & Zhang, 2007). The EAT-16 has shown high reliability and discriminant validity (Ocker et al., 2007). Alpha coefficients for the current sample for self-perception of body shape, dieting, awareness of food contents, and food preoccupation subscales were 0.83, 0.77, 0.70, and 0.82, respectively.

2.3. Analytic plan

Bivariate correlations were used to examine relationships among the four factors from the EAT-16 (self-perception of body shape, dieting, awareness of food content, food preoccupation) and BIS-11 subscales (motor, attentional, non-planning). Multivariate analyses of variance (MANOVAs) were used to examine gender differences in these variables. This approach was chosen given that each of the BIS-11 subscales (and EAT-16 subscales) is inter-correlated. For each MANOVA analysis, the multivariate test statistic (Wilks' Lambda) is reported. Bonferroni corrected ANOVAs were then conducted to assess gender differences on the individual BIS-11 and EAT-16 subscales (corrected alpha = 0.007). Next, to examine the unique relations between BIS-11 subscales and EAT-16 subscales, a multivariate general linear model was conducted. Age and race were entered as covariates, centered BIS-11 attentional, non-planning, and motor impulsivity subscales and gender were entered as predictor variables, and the interactions between gender and each of the BIS-11 subscales were added. EAT-16 subscales (self-perception of body shape, dieting, awareness of food content, and