

Associations among Aspects of Impulsivity and Eating Factors in a Nonclinical Sample

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Accepted 1 November 2003

Abstract: Objective: *Impulsivity has been well documented as a factor in the behavior of eating-disordered populations and is likely to influence normal eating patterns as well. The current study attempted to clarify the relationship between the three elements of impulsivity (nonplanning, attentional, and motor) and the three factors of eating (cognitive restraint, disinhibition, and hunger) in a nonclinical sample. Method:* Data were collected from a sample ($N = 112$) of volunteer participants from the community who answered two self-report instruments related to impulsivity (the Barratt Impulsiveness Scale, Version 11) and eating (the Eating Inventory). Partial correlations were performed on the data to control for age, sex, and education. Cognitive restraint did not correlate with any element of impulsivity. Disinhibition was positively correlated with both attentional impulsivity ($r = .40, p < .001$) and motor impulsivity ($r = .32, p < .01$). Attentional impulsivity was also positively correlated with hunger ($r = .24, p < .05$). **Discussion:** *The lack of association between cognitive restraint and impulsivity suggests that they are functionally distinct. Disinhibition is most closely associated with impulsivity, consistent with findings from clinical samples. Further clarification of the relationship between impulsivity and eating in nonclinical populations could facilitate a better understanding of the relationship between personality variables and normal eating behavior.*
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INTRODUCTION

Unhealthy eating is a primary cause of widespread obesity and increasing incidence of eating disorders in the United States. Along with exercise habits, how individuals handle the continual series of choices about what and how much to eat is a major determinant of their physical health. Although a myriad of factors are present in any given situation related to eating, some factors remain relatively stable for individuals over time. One such factor is an individual's impulsivity in thoughts and behavior.

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Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/eat.20025

Generally, impulsivity is an individual's tendency to act quickly, especially without thinking carefully or weighing the consequences of behavior. More specifically, Patton, Stanford, and Barratt (1995) have identified planning, motor activity, and attention as distinct areas in which individuals may demonstrate impulsivity. Nonplanning impulsivity involves attitudes and conclusions precipitated by a lack of reflection. Motor impulsivity involves hyperactivity due to the need for movement, which may be exacerbated by stress. Attentional impulsivity refers to rapid shifts in the focus of attention and can be exacerbated by anxiety. An individual's impulsivity, therefore, may be thought of as the combination of impulsivity in these distinct areas.

With respect to eating, impulsive individuals may be less likely to perform a variety of behaviors that contribute to healthy eating patterns. For example, impulsivity may impair an individual's ability to plan meals ahead of time, eat on a regular basis, and resist urges to indulge in high-fat foods. Therefore, it is important to better understand the relationship between impulsivity and eating to clarify how impulsivity may contribute to healthy eating behaviors or predispose a person to disordered eating.

To date, impulsivity has been investigated primarily as a factor in disordered eating. Among these populations, impulsivity has been found to vary significantly among diagnostic groups. Impulsivity is generally higher in eating-disordered populations than in non-clinical populations (Kane, Loxton, Staiger, & Dawe, in press), but impulsivity plays a part in normal eating behavior as well through its impact on choices and actions related to food.

One way to conceptualize the complicated process of eating is to use the three factors (i.e., cognitive restraint, disinhibition, and hunger) identified by Stunkard and Messick (1985). First, cognitive restraint is the element of thought or cognition involved in eating behavior. Second, disinhibition is essentially the person's sense of loss of control over eating. Third, hunger is simply the level of desire for food experienced by an individual. For both healthy and eating-disordered populations, food-related decisions are a function of these three factors at any given moment in time. For example, binge eating is clearly related to disinhibition (De Zwaan et al., 1994; Keel, Mitchell, Miller, Davis, & Crow, 2000), whereas restricting behaviors are associated more closely with cognitive restraint (Fessler, 2002). Therefore, it is important to clarify the relationship between impulsivity and these three factors to better understand the role impulsivity plays in normal eating behavior.

METHOD

Participants

Participants were a convenience sample of 112 subjects who did not receive any financial compensation for their participation. Participants answered questions on two self-report psychometric measures and sealed their responses in unmarked envelopes before returning them, so responses were both anonymous and confidential. The resulting sample was 29% male and 71% female, with an age range of 15–55 years old ($M = 25.1$, $SD = 10.1$). The sample had a mean of 14.5 years of education ($SD = 1.7$).

Instruments

Barratt Impulsiveness Scale

The Barratt Impulsiveness Scale, Version 11 (BIS-11; Patton et al., 1995), is a self-report instrument measuring three aspects of impulsivity: impulsivity related to nonplanning, motor impulsivity, and attentional impulsivity. Subjects endorse items related to the

frequency of various impulsive behaviors on a Likert scale ranging from *Rarely/Never* to *Almost always*. The BIS-11 also produces a total impulsivity score (BIS_T).

Eating Inventory

The Eating Inventory (EI; Stunkard & Messick, 1985) is a self-report instrument measuring three factors related to eating: cognitive restraint, disinhibition, and hunger. The EI has demonstrated adequate reliability and validity (Allison, Kalinsky, & Gorman, 1992; Westenhoefer, Stunkard, & Pudel, 1999).

RESULTS

Correlations with Age, Sex, and Education

Pearson product-moment correlations with two-tailed significance levels revealed a significant negative association between age and both motor impulsivity ($r = -.23$, $p < .05$) and attentional impulsivity ($r = -.28$, $p < .01$), indicating that older people are somewhat less likely to feel physically hyperactive or to experience impulsive shifts in attention. There was no significant association between age and nonplanning impulsivity ($r = -.14$, *NS*), and there were no significant associations between any aspect of impulsivity and either sex or years of education.

With respect to the EI, a point-biserial correlation revealed a significant association between cognitive restraint and sex ($r = -.25$, $p < .01$), indicating females are likely to have a somewhat higher level of cognitive restraint than males. Pearson product-moment correlations also revealed a positive association between cognitive restraint and education ($r = .22$, $p < .05$) and a negative association between age and hunger ($r = -.19$, $p < .05$). There were no other significant correlations between eating factors and demographic variables.

Correlations between Impulsivity and Eating Factors

Partial correlations were also performed on the BIS and EI subscales to evaluate the association between the three aspects of impulsivity and the three factors of eating without the influence of age, sex, or education. With these effects removed, results revealed small positive correlations between disinhibition and both motor impulsivity ($r = .32$, $p < .001$) and attentional impulsivity ($r = .40$, $p < .001$). A positive correlation was also found between attentional impulsivity and hunger ($r = .24$, $p < .05$).

DISCUSSION

The results of the current study suggest that the relationship between impulsivity and eating behaviors is not as clear as might be expected intuitively. First, the associations found among impulsivity, the eating factors, and the demographic variables of age, sex, and years of education suggest that different demographic groups may be more likely to have problems related to eating that stem from impulsivity. In particular, younger people appear to experience higher levels of attentional and motor impulsivity generally, and therefore may be more likely to make impulsive choices related to food.

Correlations among demographic variables and the eating factors provided further support for associations already recognized in the research literature. For example, higher levels of cognitive restraint were found among women, perhaps due to the greater

social emphasis on women's weight and the increased likelihood that women are dieting. Cognitive restraint also correlated positively with years of education. Although cognitive restraint has sometimes been conceptualized as the opposite of impulsivity, high levels of restraint can lead to disordered eating as well, as in the case of anorexia. Indeed, the results of the current study are consistent with the extensive literature documenting higher levels of anorexia among women and especially women with higher levels of education. In nonclinical populations, however, cognitive restraint is frequently a useful tool for making healthy food choices. Therefore, people with more education are probably more likely to have and use those skills than people with less education. Indeed, fewer years of education is a major risk factor for obesity (Wardle, Waller, & Jarvis, 2002). Finally, the negative correlation between age and hunger is consistent with findings indicating a decreased need for calories with age (Hurdy, Caster, & Hames, 1985).

A more complex scenario develops when examining the associations between impulsivity and the three factors of eating. First, the lack of association between cognitive restraint and any aspect of impulsivity disconfirms the hypothesis that higher levels of cognitive restraint are necessary to compensate for higher levels of impulsivity. This finding is consistent with that of Claes, Vandereycken, and Vertommen (2002), who found that compulsive and impulsive behaviors are not just opposite ends of the same spectrum, but rather distinct dimensions of behavior.

Nonplanning impulsivity in particular did not correlate with any of the three factors of eating. This result suggests that forethought, or a lack thereof, is actually unrelated to any dimension of normal eating behavior. Therefore, nonplanning impulsivity may function to determine eating behavior in an entirely different way than cognitive restraint. For example, someone who is high in nonplanning impulsivity may find herself very hungry and craving high-fat foods because she did not think ahead about her next meal. A nonplanning impulsive person who is low in cognitive restraint may simply drive through a fast food restaurant, whereas a nonplanning impulsive person who is high in cognitive restraint may exercise that restraint to make a healthy food choice or stick to a long-term plan. These results are consistent with others that indicate that nonplanning impulsivity is not related to symptoms of bulimia (Fischer, Smith, & Anderson, 2003).

The association between disinhibition and the various aspects of impulsivity appears complex as well. Although there was no correlation between disinhibition and nonplanning impulsivity, positive correlations were found between disinhibition and both motor impulsivity and attentional impulsivity. These results suggest that disinhibition has more to do with motor and attentional impulses than lack of planning.

Perhaps the most difficult association to explain is the positive relationship between hunger and attentional impulsivity. Attentional impulsivity is associated with increased anxiety (Patton et al., 1995). However, anxiety may increase or decrease eating in normal populations (Canetti, Bachar, & Berry, 2002). Another possibility is that the association between attentional impulsivity and hunger is due to a more general relationship between impulsivity and cravings for a variety of substances. For example, Zilberman, Tavares, and el-Guebaly (2003) found that cravings and impulsivity were positively correlated in women recovering from substance dependence. However, the specific way in which attentional impulsivity and hunger are related remains unclear. Future research will be necessary to understand this relationship more thoroughly.

The results of the current study clarify some of the particular elements of impulsivity associated with the three factors of eating. In particular, in nonclinical populations, disinhibited eating appears to share a moderately positive relationship with both attentional and motor impulsivity but have no relationship with nonplanning impulsivity.

Future investigations are necessary to determine whether these relationships hold true in populations with disordered eating and to explain the factors underlying the association between attentional impulsivity and hunger found in the current study. Further clarification of the relationship among eating habits, food choices, and the various aspects of impulsivity could aid in developing an understanding of the complex interrelationship between personality variables and actual eating behavior.

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