

## **Relationship between Impulsivity, Negative mood and Binge Eating Symptoms**

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**ABSTRACT** — Obesity is known as one of the biggest health concerns in the developed world. The problem is not only very popular but also efforts to find out its treatment have been largely unsuccessful. This study aimed to investigate the relationship between impulsivity and negative mood features with binge eating symptoms in adults. **Methods:** The sample consisted of 133 patients (67 males, 66 females) who by voluntarily sampling were selected from among the employees in the summer of 1394. The Tools has been used in this research were included Barratt Impulsiveness Scale (BIS-11), eating attitudes test (EAT-26) and temperament questionnaire (EAS). Stepwise regression analysis showed that five variables including anger, attentional impulsivity, non-planning impulsivity, socialization and motor impulsivity significantly predicted eating attitudes. **Conclusion:** The results of present research suggest that components of impulsivity and negative temperament can be an essential component in the formation and persistence of being eating disorders and be an appropriate target for intervention

**KEY WORDS:** Impulsivity, negative mood, binge eating symptoms

### **Introduction**

In the last fifty years obesity is known as one of the biggest health concerns in the developed world. The problem is not only very popular but also the attempts to find ways of treatment have been largely unsuccessful (Malik, Willett and Hu, 2013). Food is considered very important in many cultures. Even though many people are overweight, dieting or surgery and the desire of many people especially women for weight loss is common and due to high interest in having food and eating behavior, it is not surprising that this aspect of human behavior is susceptible to the disorder (Kernig, Davison and Johnson, 2009 quoted in Khosravian, 2010). Although the clinical description of the eating disorders can be traced back to many years in the past, these disorders as a sub component of the disorders that begin in childhood or adolescence appeared in the Diagnostic and Statistical Manual of disorders in 1980. Eating disorders (as quoted in DSM-IV) are complex disorders rooted in psychological, social and cultural issues (Ganji, 2014). Problems considered as eating disorders in DSM-5 include: pika disorder, rumination disorder, voidant/restrictive food intake disorder, anorexia nervosa, bulimia nervosa, binge eating disorder and unknown eating disorder.

Binge eating disorder is a type of eating disorder in which the individual has large quantities of food at each meal and it is distinguished from anorexia in the facts that there is weight loss in it. This disorder is associated with obesity and diet history as well as deficit in job performance and social functioning, depression and low self-esteem, addiction disorders and dissatisfaction with one's body shape. Its prevalence is higher than anorexia or bulimia. According to DSM-5 report the twelve-month prevalence rates of binge eating disorders in American adults over the age of 18 is 1.6% among women and 0.8% among men (American Psychological Association (APA), 2013). Eating disorders are more common in women than men. Watkins et al. in a study of women reported that eating disorders are associated with psychological disturbances such as anxiety, depression, obsessive thoughts and behaviors, social withdrawal, suicidal thoughts, high sensitivity and feelings of guilt (Watkins, Sargent and Miller, 2001). There is a relationship between eating disorders, depression, obsessive-compulsive disorder, drug abuse and personality disorders (O'Brien and Vincent, 2007). People who suffer from anorexia and bulimia are nervous, vulnerable to suicide and the mortality rate associated with eating disorders in girls between the ages of 15 to 24 years is 12 times higher than other age groups (Kaneko, 2007). Researchers have not understood fundamental reasons that disrupt normal eating. Unlike neurological disorders that can be directly attributed to a defect in a specific location in the brain, eating disorders are associated with abnormalities in the total brain system. Some psychological factors such as impulsivity, negative affection, low self-esteem, depression, anxiety, anger and loneliness can exacerbate eating disorders. In recent years following the discovery of negative mood as one of the factors effective in the incidence of this disorder, a lot of research in the field of excitement and emotion regulation related to eating disorders was conducted (Smyth, Crosby and Wegner, 2002). Mood refers to the first changes and diversity in emotional reactions. Researchers believe that people with eating disorders are faced with problems in regulating their emotions and lack the skills to deal with negative emotions and eating is something by which they can forget these unpleasant emotions for a while (Smyth, Wonderlich, Heron, 2007). Inability to control food intake in eating disorders starts with an

emotional stimulus that is initiated by the environment. In general, high impulsivity symptoms are more common in people with eating disorders (Stice, 2002 quoted in Margaret, Leitch and Martin, 2013). Since impulsivity is a multifaceted phenomenon characterized by the desire to respond quickly to the defined goals, it is associated with control inhibition which is a part of the executive function (Evenden, 1999 quoted in Margaret et al., 2013). Empirical studies show that there is an effective weak interaction between negative mood and impulsivity on emotional eating (Meerendonk et al., 2004, Gluck & Geliebter, 2004 quoted in Margaret et al., 2013). High impulsivity can increase extreme eating or binge eating when the person is in negative mood (Alfonson, 2014). This feature includes the ability to perform goal-oriented behavior, flexibility, problem solving, self-monitoring and control which is formed in childhood and develops with aging and brain development in the frontal lobe. Research has shown that when a person is in a negative mood, he is less energetic and he tries to have food to obtain energy and feels better after having food. Food helps the individual to increase his energy for a while, but he gets back to his own mood after a while (Agnes, 2012). Since the role of personality factors is undeniable in the emergence of eating disorders, in the past decade the role of impulsivity in these disorders is emphasized. The relationship between impulsivity and eating disorders is complex and impulsivity is combined with cognitive theories about anorexia and bulimia (Alfonson, 2014). Given the high prevalence of eating disorders in recent years, awareness of the psychological factors that may be associated with eating disorders or make people prone to the disorders seems necessary. Therefore the present study is performed with the purpose of defining the relationship between negative mood and impulsivity with eating disorder.

### Method

The present study is associated with correlational projects due to the lack of manipulation of the variables and methods of data collection. The population of the study included the staff working in 2015. Voluntary sampling method was used and given that the correlational design of the study and the predictor variables, 133 employees (67 males and 66 females) were assessed by eating attitudes test (EAT-26), Emotionality, Activity and Sociability (EAS) and Barrat Impulsivity Questionnaire (BIS- 11).

1) Eating attitudes test EAT-26: Eating attitudes test is widely used as a self-report instrument for pathological eating attitudes and behaviors and its efficiency is proven in identifying anorexia nervosa and Bulimia nervosa. The basic version of the eating attitude test was designed by Connor et al (1979) with 40 items. In subsequent studies, due to the length of the test and its reliability and validity its 26 item was prepared by the author with good reliability and validity in 1989. Eating attitudes test EAT-26 is the widely used standard tools for measuring symptoms of eating disorders (Karner and Garfinkel, 1989). The 26 item test includes 3 subscales of eating habits, hunger or desire to eat and oral control scored based on the Likert scale. In a study (Nunes, 2005) conducted on 161 Brazilian women to examine the reliability and validity its reliability was calculated by diagnostic sensitivity of 40% and coefficient of reliability of 84%. The Cronbach's alpha coefficient for each item was 75%. Construct validity was analyzed by factor analysis (quoted by Pourghassem Gargari et al., 2010). In a study conducted by Mollazade Esfanjani et al (2012) Cronbach's alpha was used to examine the validity which was 0.82 for the total scale and in order to obtain reliability the split half method was used the coefficient of which was 0.69 to 0.73. Emotionality, Activity and Sociability (EAS): This test was developed to assess the mood of the people and its dimensions include three sub-scales of emotionality, activity and sociability including three components of helplessness, fear and anger ranked based on Likert scale. It has low internal consistency for children version and good reliability for the rest of versions. The validity of the questionnaire is measured by factor analysis, genetic research, and correlation with other questionnaires (a version for adults). In Narrde et al. (2004) a test was conducted on 682 mother and children to check the reliability and content validity of the questionnaire in which the Cronbach's alpha coefficient of each term was between 0.53 and 0.71. The construct validity was evaluated using factor analysis.

3) Barrat Impulsivity Questionnaire (BIS- 11): Its eleventh edition is performed by Barrat (Barrat et al, 2004). Naderi and Haghshenas (2009) validated "Barrat Impulsivity scale" by calculating its correlation with Sensation seeking scale (SSS) of Zakerman in the student community. Correlation coefficient was ( $r = 0.28, p < 0.005$ ) and reliability coefficient by Cronbach's alpha was 0.72 and 0.60 by split half method. The questionnaire contains 30 items that measures three factors of cognitive, motor and nonplanning impulsivity. The items have been developed as multiple choice questions and the lowest and highest scores are 30 and 120. Patton, Stanford & Barrat (1995) have reported the internal reliability of 0.79 to 0.83.

### Results

In this section before using Pearson correlation coefficient and stepwise regression, first the assumptions of the regression equation through Durbin/ Watson Test to address the independence of errors, linear test with two STI and variance inflation and tilt and skewedness to analyze the normal distribution were used to determine the relationship between impulsivity and negative mood characteristics and eating disorders among the employees and it was found that the assumptions are established for further analysis. The data in Table 1 show that the variables of anger, cognitive impulsivity, activity level and anxiety have the highest relationship with binge eating symptoms respectively and on the other hand sociability is a variable that has no significant relationship with eating symptoms. In the next step in order to analyze the role of variable components of impulsivity and negative mood in binge eating disorders stepwise regression analysis is used. Stepwise regression analysis in Table 2 shows that among the components impulsivity and negative mood, anger, cognitive impulsivity, non-planning, sociability and motor impulsivity at five steps could predict 41% of the variance in binge eating disorders.

**Table 1. The mean, standard deviation and correlation between impulsivity and negative mood and binge eating disorder (N = 133)**

	M	SD	Binge eating disorder symptoms
Binge eating disorder symptoms	9/67	8/85	
Non-planning	21/79	4/06	0/14*
Motor impulsivity	17/66	3/93	0/27***
Cognitive impulsivity	17/19	3/93	0/38***
Sociability	10/03	2/17	0/07-
Activity	8/43	2/64	0/29***
Haplessness	8/90	3/13	0/21**
Anxiety	8/76	3/08	0/29***
Anger	9/63	2/62	0/39***

\*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Table 2. Statistical characteristics of stepwise regression of impulsivity and negative mood in eating disorders (N = 133)**

Model	Step	R	R <sup>2</sup>	F	B	β	T
Anger	1 <sup>st</sup>	0/394	0/155	24/110***	1/329	0/394	4/91***
Anger	2 <sup>nd</sup>	0/478	0/228	19/218***	1/012	0/300	3/68***
Cognitive impulsivity					0/643	0/286	3/50***
Anger	3 <sup>rd</sup>	0/571	0/326	20/764***	0/949	0/281	3/67***
Cognitive impulsivity					0/969	0/430	5/15***
Non-planning					-0/746	0/342-	-4/32***
Anger	4 <sup>th</sup>	0/610	0/372	18/943***	1/167	0/346	4/48***
Cognitive impulsivity					1/014	0/450	5/54***
Non-planning					-0/713	0/327-	-4/25***
Sociability					0/932-	0/229-	-3/07***
Anger	5 <sup>th</sup>	0/642	0/412	17/824***	1/301	0/386	5/06***
Cognitive impulsivity					0/657	0/292	3/06***
Non-planning					-0/847	0/388-	-5/01***
Sociability					-1/014	0/249-	3/42***-
Motor impulsivity					0/510	0/275	2/96**

\*P<0.05, \*\*P<0.01, \*\*\*P<0.001

### Conclusion

The results of Table 2 indicate that anger, cognitive impulsivity, non-planning, sociability and motor impulsivity play a role in predicting binge eating disorder. Theoretical models about the etiology and causes of binge eating disorder emphasize on central role of negative emotions (Fairburn, Cooper, & Shafran, 2003). For example, researchers have shown that a third of women who have binge eating disorder present eating behavior in response to negative emotions (Stice, Agras, Telch, Halmi, Mitchell & Wilson, 2001). In this regard Arnou, Kenardy, & Agras, 1995 have shown that these binge eating disorders are response to negative emotions of anger, anxiety and depression. A recent correlational study showed that negative emotions such as anger have direct relationship with eating behavior and obesity (Pasco, Williams, Jacka, Brennan, Berk, 2013). Other studies consistent with the present study showed that repressed anger in people who have eating disorders is more than the control group and they also showed that suppressing anger, rumination and lack of assertiveness are significantly associated with binge eating tendencies. So perhaps binge eating behavior is a coping strategy against anger (Connolly, Rieger and Caterson, 2007). Regarding the role of sociability that presents positive mood and to a tendency to society and interest in participating in the community, it was shown that it predicts binge eating symptoms reversely. In line with these findings Nazalia, Corfield, Cardi, Ambwani and Leppanen (2014) conducted a review study of the social characteristics of people with eating disorders which included 154 studies and showed that people with eating disorders had more problems than the control groups in terms of social skills such as facial emotion detection, face interactions and avoiding eye contact and has less social feelings. In relation to the role of impulsivity components in binge eating disorders, the studies supported the results of this study. In addition to the studies that showed the high levels of impulsivity in obese individuals compared to normal individuals (Mobbs, Crpin, Thiéry, Golay, & Van der Linden), there are other studies that have addressed the role of impulsivity components in eating disorders and weight gain. For example Meule (2013) showed that cognitive impulsivity is associated with weight gain tools. He also expressed that the combination of high motor and cognitive impulsivities makes people susceptible to binge eating disorder. In consistence with

these results the researchers showed that motor and cognitive impulsivities are directly and non-planning is indirectly predict eating disorders (Meule and Platteau, 2015). Generally the mood characteristics of anger, sociability and impulsivity components including cognition, motor and non-planning are the pre-process of this disorder and if they are not considered and managed, they can lead to binge eating disorders. In this study some limitations should also be noted. First, although the study have used employees as samples, Due to financial constraints and the practical difficulties in the random selection, the volunteered participants were selected which could make it hard to generalize the results to all employees so it is recommended to conduct the further research with a more representative sample of the population of employees. Second, the research data were obtained by self-report tools. These tools are designed to assess various issues from the perspective of participants and it has been showed that the participants can be biased so it is recommended to use tests and exams along with the self-report tools.

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