

# A Modern and Novel Neuropsychological Study on Evaluation of Eating Disorders and Their Relationships with Emotional Intelligence in Exceptional Children

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**Abstract**—Currently, eating disorders are one of the major concerns of World Health Organization (WHO) since such disorders have the highest death rate among neuropsychological diseases. In this regard, the current study aims to determine the measure of eating disorders in exceptional children for finding the relationship between such disorders and emotional intelligence as a neuropsychological – social variable. This is a survey research and its measuring tool is closed-ended questionnaire. The statistical population is including 5000 exceptional children during educational year 2016-2017 among them, 500 exceptional children are selected using stratified random sampling. The results were shown that emotional intelligence and its features are a meaningful negative relationship with eating disorders and their features. It means that by increasing the self-awareness, self-control, social consciousness, social skills and in general, emotional intelligence of subjects, their eating disorders are reduced. Based on the regression analysis of the investigated variables, social consciousness with  $\beta=2.23$  is the most important predictive factor of changes in eating disorders.

**Index Terms**— Neuropsychological Study, Eating Disorders, Emotional Intelligence, Exceptional Children, Anorexia Nervosa, Bulimia Nervosa

## 1 INTRODUCTION

During last decades, numerous papers and books have been published about eating disorders. This is more interested when the prevalence of such disorders reaches to epidemic level [1–15]. According to World Health Organization (WHO) reports, such disorders are accompanied by a high rate of death and in fact, they are of the highest death rate among neuropsychological diseases [16, 17].

Eating disorders are the third widespread chronic disease among adolescents and its prevalence rate is increasing around the world [16–19]. The most important group subjected to eating disorders are exceptional children; such disorders are the third widespread disease in this group after obesity and asthma [20]. In Iran, it has been shown that exceptional children are mostly subjected to eating disorders [21–29]. Eating disorders are described feeding patterns that are usually described by representatives such as limiting food absorption (anorexia nervosa) or regular extreme eating, intentional vomit, hard exercises, or using laxative (bulimia nervosa) [19–29]. Such disorders are usually emerged after hard diets in people who afraid from obesity, wish to have delicate body and extremely pay attention to their food, weight and appearance [24, 26, 27 and 30].

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The high tendency of the contemporary culture, especially western culture, toward leanness and fitness usually force people to follow hard diets [31–43]. Undoubtedly, leanness is a privilege, especially for girls; that, since 30 years ago till now, ideal body for girls became a thin body but during the same period, the average weights of girls are increasing due to various reasons. Hence, girls asked to lose weight while this is a hard task to do [44–54].

Numerous theorists believe that increasing rate of eating disorders in recent years is due to this emphasis on leanness and accounting it as a value in western societies, which lead to increase in prevalence of such disorders. The emergence of this disease among Iranian people is probably due to the effect of western cultural values through social communication technologies and high number of adolescents and young people in Iran population [55–59]. Considering the physical, neuropsychological, and social problems induced by eating disorders, it is very valuable to find a correct understanding of this disease and its preventing and treatment methods. Along with various cultural, social, and biological factors of eating disorders, researchers have been shown that emotional intelligence and its components can be effective in describing such disorders. In this regard, the main question of the current study is that how is the rate of eating disorders among exceptional children of Iran? And what is the relationship of emotional intelligence and its features with this problem?

There have been various researches about the relationship between eating disorders and emotional intelligence or its components, some most important ones are reviewed here:

Koifman (1999) performed a research among exceptional children of University of Windsor, Canada to determine the

relationship between eating disorders and emotional intelligence. The revised bulimia test, eating attitude test-26 and baron emotional intelligence inventory questionnaire were used in the research. The results were shown that there is a meaningful negative relationship between eating disorders and emotional intelligence [60-66].

Mitchel, Soll, Eckert and Pyle (1998) performed an investigation with 50 adult girls using eating disorders questionnaire and showed that people with eating disorders are some problems in social skills that is one of the emotional intelligence components [67-69].

Grisset and Norvell (1992) confirmed this idea that people with eating disorders are of interpersonal behaviours with lower quality than other people. Their investigation about the evaluation of communication quality, social support, and social skills were performed through self-reporting scales by 21 gluttons and 21 people as control group [70-77].

Geist (1989) performed a longitudinal study based on neuropsychotherapy of 20 people who had eating disorders. The results were shown that there is a meaningful relationship between eating disorders and social skills. It means that people with eating disorders have lower quality of social skills than control group [78-80].

Today, media, advertisements, and pop culture are aiming to equalize leanness with health, success and beauty; this leads people to face with serious neuropsychological and physical risks. It can be said that girls have been more vulnerable than men in this regard [81-88]; since, as claimed by Giddens, social norms about girls are more emphasized on physical appealing than men and the favourite body of girls are portrayed as a lean body. According to the high attention of society to the visual beauty of girls, they are more subjected to physical dissatisfaction than men [89, 90]. In fact, exceptional children are repeatedly encountered with the concept and value of leanness as the definition of beauty for girls when they are coming to the society; this happens when they are paid so much attention to the opinion of other people about themselves. Therefore, girls who are felt that they are not looking good develop a self-society in themselves that emphasize on their physical inelegancy and formation of this undesirable self-society leads to physical dissatisfaction and social anxiety [91-99]. Eating disorders are induced by this social anxiety resulted from physical dissatisfaction. Accordingly, eating disorders may have a neuropsychological and social origin and the current research is formed on the basis of the relationship between eating disorders and neuropsychological pressures forced by the society.

The concept of emotional intelligence investigated in the current research has a neuropsychological and social load and is defined as a set of non-cognitive abilities and skills which affects the ability of person against external pressures and requests. In fact, people who are easily yielded to various social pressures are considered as people with weak emotional intelligence [100-106]. According to this definition, emotional intelligence may be related to eating disorders. In the current study, the main theory is presented due to this deduction that people with low emotional intelligence mark are more impressed by social messages about leanness than others and

they increase the risk of subjecting to eating disorders by getting hard diets.

Various researches have been confirmed that people with eating disorders show extreme reactions against the opinions and requests of others. Comparison of people subjected to eating disorders with control group have been shown that they are looking for confirmation from others and it is more serious about having a good look [107-110].

The relationship between emotional intelligence and eating disorders is justified by neuropsychodynamics as well; according to this viewpoint, people with eating disorders cannot easily understand and called their emotions (emotional self-awareness) and hence, eat more and more to solve unpleasant and ambiguous emotions (emotional self-control). Lack of self-awareness in people subjected to eating disorders, i.e. inability to differentiate between hunger and mental conditions have been confirmed in various investigations. Researches have been shown that people with anorexia nervosa are felt become full immediately after starting to eat while gluttons cannot differentiate starving and other physical or mental demands [111-121].

The theorists of "self-neuropsychologist" also investigated the relationship between some components of emotional intelligence and eating disorders and found that social skills are very weak among people with eating disorders [122-129].

According to the mentioned viewpoints and results of numerous researches about the relationship between emotional intelligence and eating disorders, emotional intelligence can be considered as one of the main predisposing factors of eating disorders. As indicated by Goleman, emotional intelligence determines our capacity for understanding our, and others, feelings and helps us to make self-motivation and control our emotions and regulate our behaviours with others. The emotional intelligence model of Goleman consists of five zones: (1) Emotional self-awareness; (2) Emotional self-control; (3) Social consciousness; (4) Social skills; and (5) Self-motivation [130-134].

In the current research, four first components of emotional intelligence model of Goleman, which their effects on eating disorders have been confirmed, are used to investigate the emotional intelligence of exceptional children.

**Emotional Self-Awareness:** A deep and clear understanding of our feelings, emotions, strengths and weaknesses, demands, and tastes. From Goleman point of view, self-awareness is the origin and base of other components of emotional intelligence. Until we have a low self-awareness level, we have some problems in choosing objectives, planning for obtaining the objectives, managing and controlling our feelings, self-motivating, applying some order to coordinate with others' feelings, as well as developing appropriate social skills for objectives and actions. Encountering with various references, people with high self-awareness can easily recognize what are the effects of references' feeling on them and select an appropriate answer for correct reaction. In addition, such people are able to use their thoughts for controlling their emotions.

**Emotional Self-Control:** During our life, we would be encountered with actions that are not pleasant for us and such

unpleasantness immediately affect our moods; such as dealing with our family members or friends or even in a broader level, actions that are made in our mind. In this regard, we have to necessary ability for controlling and managing our thoughts and behaviours which such abilities originate from self-knowledge and social skills. The necessity of controlling and managing our emotions is so serious that it considered as the key for emotional heaven since the only way for lining up a given amount of emotions with thoughts and traveling in the right road of mentality is self-controlling [135-142].

**Social Consciousness:** It is the understanding of others' feelings and applying an appropriate reaction against them. We try to more appropriately react against people who are more important for us and we can do this task if we understand the feelings of other side.

**Social Skills:** This component includes our ability for managing our relations with other people. Goleman believes that the ability for understanding, differentiating, and controlling of our feelings is critical for affecting our relations with others to make an appropriate relation through sympathy. People may show emotional behaviours in a right place and time if and only if they have high social skills. People with high level of self-knowledge have honest reactions with themselves and others and their social skills stabilize their relations [143-163].

Based on the conceptual model originated from experimental and theoretical background, the following hypotheses are investigated. Eating disorders and their features are negatively related to emotional intelligence:

- (a) Eating disorders and their features are negatively related to emotional self-awareness.
- (b) Eating disorders and their features are negatively related to emotional self-controlling.
- (c) Eating disorders and their features are negatively related to social consciousness.
- (d) Eating disorders and their features are negatively related to social skills.

## 2 RESEARCH METHODOLOGY

The current research is a survey research and from time criterion point of view, it is cross-sectional. To evaluate eating disorders as a variable, a researcher-made questionnaire was used which its items were designed based on diagnostic and statistical manual of mental disorders, fourth edition-text revision (DSM-IV-TR). To investigate emotional intelligence as another variable, Siberia Shearing standard questionnaire was used and since it is a foreign questionnaire, we were tried to localize its items, without any change in their concepts, and to change the structure of sentences so that their compatibility with cultural and social conditions of the investigated population increase.

Statistical population of the current research consists of all undergraduate exceptional children of Iran, categorizing based on colleges, during educational year 2016-2017. Its accurate number is 5000 people.

Data analysis was performed by SPSS-24 Software. Frequency distribution, central and dispersion indices were used in descriptive statistics section while one-way analysis of vari-

ance and r-Pearson correlation test were used in inferential statistics.

### 2.1 Validity and Reliability of Measuring Tool

The validity of measuring tool was evaluated by content validity and its reliability was assessed by Cronbach's Alpha using SPSS-24 Software. Values higher than 0.6 are acceptable. As can be seen, the results are of acceptable reliability.

### 2.2 Eating Disorders

Eating disorders are a part of nutritional – neuropsychological diseases which their primary characteristic is disturbance and disorderliness of normal nutritional behaviours and caused major disorders in thoughts and imagines of the patient relative to foods and it, especially body weight [24-34]. According to the diagnostic and statistical manual of mental disorders, fourth edition-text revision, eating disorders are categorized into three different groups including anorexia nervosa, bulimia nervosa and eating disorders not otherwise specified [17-37]. In anorexia nervosa, patient refuse eating or eat very low so that he/she have not normal weight, very afraid from weight increasing and has considerably misunderstandings about his/her body shape and even when he/she is lean, feel high weight. This disorder is more prevalence in exceptional children and is normally started during adolescence [37-53].

Bulimia nervosa identifies by repeated periods of overeating, leading to inappropriate compensatory behaviours [37-42]. This disorder, generally happen for exceptional children, starts with overeating, feeling have no control on eating, and fearing about obesity and then continuous with inappropriate behaviours for preventing obesity such as dieting, hard exercising, intentional vomit, and misusing emollient drugs. Such people have misunderstanding about their body shape and size but, opposite to anorexia nervosa, weight does not lose considerably [43-57].

Eating disorders not otherwise specified have a wide range including patients having similar signs with anorexia nervosa and bulimia nervosa but have not all criteria for these two disorders [58-64]. Eating disorders not otherwise specified are the most prevalent eating disorders and this fact that most patients are categorized in this undefined group by DSM-IV is one of the major deficiencies of it [65-81].

In the current research, anorexia nervosa and bulimia nervosa were measured through the average answers of exceptional children to 84 questions of a researcher-made questionnaire in marked assessment level. The items of this questionnaire were designed based on the criteria of DSM-IV-TR for anorexia nervosa and bulimia nervosa.

### 2.3 Emotional Intelligence

As defined by Goleman (1995), emotional intelligence is including awareness about feelings and using them for making appropriate decisions during life, ability for tolerating mental impacts, and controlling mental disturbances. He believed that emotional intelligence is a type of social skills [81-110].

In the current study, emotional intelligence was measured based on self-awareness, self-controlling, social consciousness,

and social skills through the average answers of exceptional children to the items related to such features, originated from Siberia Shearing standard questionnaire in marked assessment level [111-117].

### 3 RESULTS AND DISCUSSION

In this section, the informations related to the general conditions of subjects and the average of research variables is considered.

The respondents have an average age of 10.27, average length of 100.93; average weight of 35.37 and the average members of their family were 6.07. The body mass index of majority of respondents (64%) was normal and most of them (93.1%) were single. Educational level of respondents' fathers was very higher than respondents' mothers.

As can be seen the average features of emotional intelligence (self-awareness, self-control, social consciousness, and social skills) for respondents are 17.24, 7.96, 7.32, and 8.18, respectively, and in general, the mean of total emotional intelligence for respondents is 98.85. The average of self-awareness is higher than total mean while the average of self-controlling is lower than total mean. However, the average of social consciousness and social skills are approximately close to the total mean.

Furthremore, the average of eating disorders' features (anorexia nervosa and bulimia nervosa) for respondents is 23.54 and 33.42, respectively, and the total mean of eating disorders is 16.65. The average of eating disorders and their features are lower than their spectral average; it means that the amount of anorexia nervosa and bulimia nervosa, and totally, eating disorders for respondents are lower than mean value.

To investigate the correlation between eating disorders and their features and emotional intelligence and its features, r-Pearson correlation test was used. The results show that emotional intelligence and its features investigated in the current research (self-awareness, self-control, social consciousness, and social skills) are a meaningful negative relation with eating disorders and their features (anorexia nervosa and bulimia nervosa); it means that increasing the value of self-awareness, self-control, social consciousness, and social skills, an in general, emotional intelligence, reduce the risk of subjecting to anorexia nervosa and bulimia nervosa, and in general, eating disorders. Moreover, the results show that the correlation between emotional intelligence and their features with eating disorders is stronger than the correlation between emotional intelligence and their features with anorexia nervosa and bulimia nervosa.

The regression analysis describing the variation of dependent variable through independent ones shows that the emotional intelligence and their features explain 0.31% of eating disorders' variance. Therefore, the remained 0.78% of these disorders' variance will be explained by other variables does not investigate in the current research. Eating disorders emerge due to a complex mixture of numerous factors. Various researches confirmed that eating disorders are related to various factors including biological and genetic, social (including culture of society, social comparisons, family pressure,

etc.) as well as individual factors (e.g. body mass index, self-esteem, body imagination and religiosity); however, it is not necessary to have all these factors or to be subjected to all these effective factors for emerging such disorders. In some cases, a set of genetic factors or biological consequences of diet and mental factors lead to eating disorders and in some other cases, a completely different set of factors lead to this disease. Therefore, emotional intelligence as a necessary factor for eating disorders only explains small part of variations of eating disorder.

The obtained meaningful level (0.000) indicates a linear relationship between independent variables of this test. Increasing the contribution of independent variables in explanation of variance increases the statistics of "f". These results show that the linear relationships between the input variables and eating disorders are considerably meaningful.

It should be noted that  $b$  and  $\beta$  coefficients of social consciousness of independent variable (emotional intelligence) over dependent variable. This result indicates that social consciousness with  $\beta = -2.23$  is of the highest contribution in explanation of eating disorders' variance.

### 4 CONCLUSIONS, PERSPECTIVES AND FUTURE STUDIES

In the current research, the relationship between eating disorders and emotional intelligence is investigated. According to the obtained results, emotional intelligence is of a meaningful negative relationship with eating disorders and their features. In other words, increasing the self-awareness, self-control, social consciousness, and social skills, and in general, emotional intelligence reduces the risk of eating disorders in subjects.

Based on neuropsychodynamic approach, eating disorders emerge in people who have some problem in understanding of their emotions and feeling as well as naming those. In the current research, the meaningful negative relationship between self-awareness and eating disorders confirms this theory. Based on this approach, eating disorders emerge in people who are suffered from high anxiety and misunderstanding about their bodies which forced them to eat as a way to be calm and supported. People with anorexia nervosa feel they are full immediately after starting to eat while people with bulimia nervosa frequently cannot able to differentiate starving feeling from other physical or mental demands, cannot understand their emotions and cannot call those, and gradually learn that eating can be used as a method for solving their unpleasant emotions. Inability of people with eating disorders in differentiating between starving and other emotions (lack of emotional self-awareness) has been confirmed by various researches.

Theorists of "self-neuropsychologist" investigated some factors such as self-weakness and communication problems in eating disorders' patients. In the current study, the meaningful negative relationships between self-awareness, self-control, social consciousness, and social skills, and in general, emotional intelligence with eating disorders show that these viewpoints are applicable for this statistical population.

People with not enough social skills are extremely reacted



against the beliefs, demands, and viewpoints of other people. It has been confirmed that people with eating disorders also are highly intensive about the viewpoints and beliefs of other people. Hence, if people have enough social skills they does not feel any demand to coordinate their body with taste of other people and therefore, they does not asked himself to get hard diets. In the current study, the negative correlation between social skills and eating disorders confirms this fact. In addition, as social consciousness has the highest contribution in explanation of eating disorders' variance, it can be concluded that people with low social consciousness rank will easily yield against social pressures and due to lack of enough social skills, they will regulate their behaviours with such social pressures. In this case, young girls who socially asked to be lean, get very liming diets to meet this objective and hence, they are subjected to eating disorders.

Based on above mentioned facts, it can deduce that factors such as media advertisements and social pressures for becoming leaner can affect people if they have low emotional intelligence; since emotional intelligence is a skill which affects the ability of people to resist against environmental pressures and demands. Therefore, the opposite also is correct; it means that lack of emotional intelligence forces people to yield against cultural and social pressures for getting hard diets in order to achieve the expected beauty of society and hence, pave the road for emerging physical and mental problems such as eating disorders.

The results of the current paper are in accordance with the findings of the following researches:

The research performed by Koifman (1999) showed that eating disorders of exceptional children is negatively related to emotional intelligence and its features.

The research performed by Mitchel, Soll, Eckert and Pyle (1998) showed that people with eating disorders suffer from interpersonal relations.

The research performed by Grisset and Norvell (1992) evaluated the quality of communications, social support, and social skills of people. They showed that people with eating disorders have interpersonal relations with lower quality than other people.

The longitudinal research of Geist (1989) showed that people with eating disorders have lower social skills than control group and the negative relationship between eating disorders and social skills confirmed.

Regarding the importance of emotional intelligence, especially, in preventing eating disorders, and generally, in getting success during life, it is expected from educational authorities that provide necessary facilities for teaching emotional intelligence skills in schools and universities.

The results of the current study were shown that people with high level of self-awareness, self-control, social consciousness, and social skills are not generally subjected to eating disorders. It is recommended that people try to identify their feelings, tendencies, demands, strengths and weaknesses so that use their logics for controlling their feelings and make appropriate response to their tendency for more leaning. Young girls are continually subjected to leaning message in the society and this message affects their feelings and behav-

iours, especially from nutritional point of view. In this regard, they should be able to control and manage their thoughts and behaviours which basically consist of self-awareness and self-controlling. In addition, during current lifestyle in which others determine a great part of our demands, we can appropriately react against social demands and pressures such as pressure for more leaning by developing our social skills and consciousness. In addition to ourselves efforts and teaching from official centres, public media can be very useful in increasing the level of self-awareness, self-control, social consciousness, and social skills of people through public educations.

There are not accurate criteria for evaluating "eating disorders not otherwise specified"; so, this feature of eating disorders is not investigated here and two other features, anorexia nervosa and bulimia nervosa, are studied.

Since eating disorders are more privilege in developed countries, it is recommended that to investigate the prevalence of such disorders in various regions of the country that are not equally developed from social and economic points of view. Since emotional intelligence is learnable, it is suggested that the effect of emotional intelligence on eating disorders experimentally investigate. In the current research, relationship between eating disorders and emotional intelligence model of Goleman. It is recommended that this relationship investigate based on Bar-on composite model.

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