

PERSONALITY TRAITS AND RISK OF EATING DISORDERS IN COLLEGE STUDENTS

Hina Akbar, Irum Naqvi*, and Shumyl Rizwan

National Institute of Psychology, Quaid-i-Azam University, Islamabad

The present cross-sectional research aimed at exploring the relationship between personality traits and risks of eating disorders. A purposive sample of boys ($n=150$) and girls ($n=150$), aged 17-20 years ($M=18.66$, $SD=1.20$), provided quantitative data for research. Personality traits was measured through NEO-FFI (Costa & McCrae, 2003) and risk of eating disorders were measured with the help of eating disorder inventory-3 (Garner, 2004). Findings revealed significant positive relationship between personality traits of conscientiousness, neuroticism, openness and risks of eating disorders (drive for thinness, bulimia and body dissatisfaction) in college students. A negative relationship between traits extraversion and agreeableness and risks of eating disorders (drive for thinness, bulimia and body dissatisfaction) was confirmed. Demographic factors of gender, body mass index (BMI) and family system, along with the NEO-Five Factor Inventory personality were explored as significant predictors of change in risks for eating disorders.

Keywords: risk of eating disorders, personality traits, college students

Eating disturbances are found to be more prevalent among late adolescents and young adults in both western and non-western population (Culbert et al., 2015; Stice et al., 2009). The disturbances in eating behaviors are estimated to impact a large number of individuals, in turn, impacting not only their physical but psychological health as well. Research has revealed that if not attended to, these early signs of developing eating disorders negatively impact the health of these individuals (Klump et al., 2009). There is an array of sociocultural factors that predispose individuals to high risk of developing eating disorders such as social pressure, expectation for thinness, media exposure, internalization of thin ideal and risky dieting behaviors (Culbert et al., 2015; Goldschmidt et al., 2012). Striegel-Moore et al. (2009) reported that girls show more disturbances as compared to boys, and this fact is found in both clinical and community sample. The risk of eating disorders is a tendency or proneness towards developing eating disorders i.e., binge eating, excessive eating and then vomiting in order to have protection from weight gain. For the purpose of present study, risk of eating disorders is broadly defined as consisting of three broad dimensions i.e., bulimia, drive for thinness, and body dissatisfaction (Garner, 2004).

Body dissatisfaction is explained as disruption of an individual's body image that is often related to one's weight (Pallan et al., 2011). Stice and Shaw (2004) defined body dissatisfaction as criticism and negative evaluations of one's physical body (whole figure, stomach, and hips). Presence of a negative body image evaluation

*Correspondence concerning this article should be addressed to Dr. Irum Naqvi, Assistant Professor, National Institute of Islamabad, Quaid-i-Azam University, Islamabad, Pakistan. Email: irumnaqvi@nip.edu.pk

is higher among women and this fact is confirmed by the previous findings (Schwartz & Brownell, 2004). Overweight women have more body dissatisfaction as compared to women with average weight (Cash et al., 2004). Different cultures have different viewpoints about bodily representations and these standpoints are changing over time. In western countries, man's muscularity is considered ideal and in contrast, women's thinness is appreciated (Grogan & Richards, 2002; Hudson et al., 2007). Next, the word bulimia comprises four major points; an extreme need to eat more than the required quantity, fright of becoming fat, concerns about body shape and unhelpful behaviors that are incorporated in life to stay away from gaining weight (Allison et al., 2005; Williamson et al., 2004). The mental and physical wellbeing of individuals especially women has been given greater consideration in the literature of bulimia. Swanson et al. (2011) reported that the overall prevalence of bulimia nervosa was 5.1% in women as compared to 2.3% in boys. Bulimia nervosa is associated with repeated intervals of over eating (binge eating) which lead to behaviors that are used to avoid gaining weight such as fasting, extreme exercise, self-induce vomiting or abuse of laxative (APA, 2022). The present day media is increasingly engaged in representation of body image as thinner and slimmer. Most of the women models that appear on screen are thin and slim and the average women's body does not meet this ideal criterion. As a result of this incongruence between average weight and thin ideal, most women are experiencing drive for thinness and dissatisfaction with their bodies (Neighbours & Sobal, 2007 as cited in Saguy, 2013).

Personality traits have been significantly focused in etiological models of eating pathology. Research has pointed towards the contributory role of personality characteristics, such as neuroticism, perfectionism and impulsivity in eating disorders (Culbert et al., 2015). Neuroticism or inclination towards negative emotionality is a disposition for experiencing primitive emotions and is linked with eating pathology (Ghaderi & Scott, 2000). Martin and Racine (2017) explained that conscientiousness has a significant link with eating pathology as conscientiousness includes traits like greater self-discipline, these people follow order and have firm organization in their life. Therefore, this trait diverts them toward disturbed eating attitudes. As they want to be perfect in all aspects of their life, in an attempt to maintain appropriate or slimmer bodies, they are inclined towards eating pathology. In addition, openness and neuroticism are also positively associated with eating disorders while agreeableness and extraversion are negatively related to eating disturbances (Garrido et al., 2007). As such, the global findings on the relationship between personality dispositions and patterns of disordered eating are currently inconclusive.

Even though there are studies that have identified personal, social, and cultural factors that increase the risk of developing eating disorders (Zaman, 2014; Roze, 2013; Muazzam & Khalid, 2011), there is a need to design a comprehensive study that explores the combined impact of these multiple factors on the life of an individual. For the same reason, the present study aims to identify the relationship between personality traits and risk of eating disorder among college students. Additionally, the objective is to explore how the contextual demographic factors (i.e. gender, BMI, and family system) influence the risk of eating disorders in college students.

Hypotheses

- There is likely to be a positive relationship between personality traits (such as conscientiousness, neuroticism, openness) and risk of eating disorders in college students.
- There is likely to be a negative relationship between personality traits (such as extraversion and agreeableness) and risk of eating disorders in college students.
- There are likely to be gender differences in personality traits and risk of eating disorders in college students

Method

Research Design

The present research used a cross-sectional research design.

Sample

A sample of 300 college students ($n = 150$ boys, $n = 150$ girls) was included from public and semi-private colleges located in Rawalpindi and Islamabad city. Purposive sampling was used for selecting the study participants. Based on the BMI calculation of each participant of study, the sample was categorized as underweight if having BMI < 18.5 kg/m² ($n=120$, 40%), average weight with BMI range 18.0-24.9 kg/m² ($n=100$, 33%) and overweight with BMI ≥ 25 kg/m² ($n=80$, 26.6%) (WHO, 2010). The sample was from intermediate ($n=140$, 46.8%) and graduate ($n=160$, 54.2%) programs. The sample belonged to age range of 17 to 20 years ($M=18.66$, $SD=1.20$). 55.5% ($n=166$) of the college students belonged to nuclear family system and 45.5% of them belonged to joint family system ($n=133$).

Assessment Measures

NEO-Five Factor Inventory (NEO-FFI) (Costa & McCrae, 2003)

It is a short version of NEO-PI-R (Costa & McCrae, 2003). It has 5 subscales of openness, neuroticism, agreeableness, extraversion, and conscientiousness with 12 items in each of these subscales. These items are to be marked on a 5-point Likert scale. The scoring system is from 1 “*strongly disagree*” to 5 “*strongly agree*”. The score range for each domain is 0 - 48. 28 of the total 60 NEO-FFI items are negatively versed. The alpha reliabilities of openness, neuroticism, conscientiousness, extraversion, and agreeableness are .60, .75, .81, .74, and .67, respectively (Costa & McCrae, 2003). In the present study, the Cronbach alpha for neuroticism, extraversion, openness, agreeableness, and conscientiousness was .74, .76, .73, .71 and .70, respectively

Eating Disorder Inventory-3 (EDI-3) (Garner, 2004)

This scale was designed to measure psychological traits associated with eating disorder and is intended to aid diagnoses formulation. It consists of 12 subscales. In

the present study, only the risk of eating disorder scales, including bulimia, body dissatisfaction, and drive for thinness were used. The individuals responded on a 6-point Likert scale, ranging from 0 “*never*” to 6 “*always*”. Body dissatisfaction scale consisted of 10 items and assessed attitudes related to one’s body on a score range of 0- 40. It has a high internal consistency of .91. Drive for thinness subscale consisted of 7 items, assessing an individual’s desire to be thinner along with fear of gaining weight (Garner, 2004). With a score range of 0-28, it has an alpha coefficient of .81 (Phelps et al., 1999). Bulimia subscale consisted of 8 items and assessed the presence of thoughts and behaviors related to binge eating (Garner, 2004). It has a score range of 0- 32. The scores obtained on each subscale were treated as continuous. The Cronbach alpha for body dissatisfaction, drive for thinness and bulimia was .79, .74, and .73, respectively in the present study.

Procedure

This study was carried out in colleges within the twin cities of Rawalpindi and Islamabad. Required permissions were taken from the officials of selected educational institutions. The students were assured about the confidentiality of the data. The participants’ right to withdraw from study was duly discussed; however, their complete participation was encouraged. Each participant was asked to respond to a demographic information sheet, EDI-3 and NEO-FFI. Instructions on how to respond to each instrument were provided verbally as well as in writing to the participants. The researcher reviewed the response sheets received from the participants to make sure that no item is left unmarked. The college authorities and participants were appreciated for their assistance.

Ethical Considerations

- After explaining the purpose of research, a verbal and written informed consent was obtained from the study participants.
- Students were assured of confidentiality and that the data will only be used for the research purpose.
- The participants’ right to withdraw from study was discussed.

Results

In order to achieve the objectives, the quantitative data collected from the sample was statistically analyzed using SPSS. Pearson product moment correlation was used to identify the relationship between personality traits and risk of eating disorder in college students. Independent sample *t*-test and One-way ANOVA was employed to explore group based differences for the demographics of gender, family system, and BMI.

Table 1

Descriptive Statistics and Correlations for Personality Traits and Risk of Eating Disorders in College Students

Scales	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Openness	40.21	5.73	-							
2. Neuroticism	36.79	8.91	.21**	-						
3. Extraversion	40.97	8.88	.19**	-.14**	-					
4. Agreeableness	49.12	19.21	.36**	.42**	.23**	-				
5. Conscientiousness	41.34	8.21	.34**	-.21**	.37**	.45**	-			
6. Drive for thinness	15.57	8.26	.35**	.23**	-.41**	-.44**	.31**	-		
7. Bulimia	13.36	8.49	.17*	.41**	-.29**	-.62**	.26**	.51**	-	
8. Body dissatisfaction	18.59	7.97	.49**	.15**	-.46**	-.22**	.23**	.22**	.31**	-

Note. * $p < .05$, ** $p < .01$

Openness, neuroticism and conscientiousness, as subscale of personality, showed a moderate significant positive correlation with all components of risk of eating disorder. Extraversion and agreeableness as personality components showed a moderate significant negative correlation with all subscales of risk of eating disorder in the present study sample. Moderate significant correlation is observed among the five subscales of NEO-FFI and the same has been observed among the three subscales of EDI.

Table 2

Independent Sample t-test Showing Gender Differences in NEO-FFI and EDI subscales in College Students

Scales	Boys		Girls		<i>t</i> (298)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Drive for thinness	12.73	9.78	15.71	7.55	1.42	.012	.33
Bulimia	17.00	8.18	19.91	8.57	.78	.043	.19
Body Dissatisfaction	15.00	8.23	18.20	9.18	1.31	.013	.32
Neuroticism	14.53	8.18	19.71	9.95	3.42	.014	.33
Extraversion	27.00	12.18	19.91	9.97	3.78	.015	.35
Openness	15.00	8.23	15.02	8.11	1.31	.416	.12
Conscientiousness	17.12	8.01	18.99	7.11	2.91	.051	.29
Agreeableness	12.31	7.04	12.30	7.00	1.41	.295	.11

Note. Boys ($n = 150$), Girls ($n = 150$)

Results from table 2 revealed significant gender differences on all three subscales included from EDI. It was observed that among the college students sample, girls experience a significantly higher body dissatisfaction, bulimia, and drive for thinness as compared to college going boys as their counterparts. Girls were shown to experience significantly higher levels of neuroticism and conscientiousness as compared to boys. On the subscale measuring extraversion, college going boys reported higher levels as compared to college going girls.

Table 3

Independent Sample t-test values of NEO-FFI and EDI subscales to compare Nuclear and Joint Family Systems

Scales	Nuclear		Joint		<i>t</i> (298)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Drive for thinness	18.96	8.74	12.61	8.14	2.07	.050	.35
Body dissatisfaction	19.90	7.97	11.71	7.84	2.23	.010	.36
Bulimia	19.07	8.27	14.96	8.24	2.06	.012	.33
Openness	34.51	9.27	40.2	8.35	2.21	.011	.33
Neuroticism	37.43	10.41	30.00	6.53	2.19	.013	.37
Extraversion	42.24	5.45	32.93	7.83	3.91	.001	.38
Agreeableness	43.13	7.28	40.30	6.52	2.00	.052	.28
Conscientiousness	43.43	9.27	40.42	10.60	1.99	.050	.27

Note. Nuclear (*n* = 166), Joint (*n* = 133)

Results in table 3 reveal that the students from nuclear families have a significantly higher risk of eating disorders as compared to students living in joint family system. It is also apparent from table 3 that individuals from the joint family system rate significantly higher only on personality trait of openness, whereas for all other traits, i.e., neuroticism, extraversion, agreeableness, extraversion and conscientiousness, students from nuclear family systems rated significantly higher.

Table 4

Means, Standard Deviations and One-way Analyses of Variance in NEO-FFI and EDI subscales to compare Underweight, Average and Overweight College Students

Variable s	Body Mass Index						<i>F</i> (297)	η ²
	Underweight		Average		Overweight			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
DT	14.61	6.79	12.76	9.25	18.80	4.98	4.78*	.045
BD	9.45	8.76	12.37	10.1	17.08	4.92	5.58**	.051
Bul.	11.71	7.55	15.45	9.04	20.31	6.31	6.00**	.081
Open.	41.17	9.33	40.80	8.43	42.25	0.26	0.31	.001
Neuro.	37.51	6.16	40.02	7.57	40.27	0.17	0.78	.021
Ext.	40.47	6.11	40.41	5.37	40.50	0.55	0.44	.007
Agr.	41.25	8.26	41.41	8.21	41.65	0.86	0.31	.051
Cons.	43.43	11.6	41.91	8.08	42.25	0.21	0.21	.031

Note. Underweight (*n*= 120), Average (*n* =100), Overweight (*n*=80). DT=Drive for Thinness, BS= Body Dissatisfaction, Bul.= Bulimia, Open.= Openness, Neuro.= Neuroticism, Ext.=Extraversion, Agr.=Agreeableness, Cons.= Conscientiousness. **p* < .05, ***p* < .01

Table 4 shows significant group differences in body dissatisfaction, bulimia, and drive for thinness among the underweight, average and overweight college students based on their calculated BMI. Overweight students show significantly higher drive for thinness as compared to average weight students. Overweight

students also show significantly higher body dissatisfaction than underweight students. Overweight students run a significantly higher risk of bulimia as compared to underweight students.

Discussion

In order to achieve the study objectives, correlation coefficient was obtained and the results showed that there exists a positive relationship between conscientiousness and risk of eating disorder. Previous literature suggests a negative relationship between conscientiousness and bulimia, as the study by Martin and Racine (2017) indicates conscientiousness as a protective factor in the context of bulimia. The result of the present study may be justified by the fact that conscientious people want to be perfect all the time and in all domains of life especially in case of looks and appearance. Furthermore, a positive significant relationship is found among neuroticism, drive for thinness, body dissatisfaction and bulimia. In literature, neuroticism and eating disturbances have been found to be positively correlated with each other as evident by research conducted by Gilmartin et al. (2022). In this study, disturbed eating is reflected by higher score on neuroticism domain. Participants who scored high on different facets of neuroticism also scored high on eating disorder subscales. Thus, neuroticism serves as risk factor for bulimia and eating disorders (Lilenfeld et al., 2006). Yeh et al. (2009) found that those participants who were higher on neuroticism had higher BMI and they also suffer from metabolic syndromes. As it is clear that neurotic people tend to feel negative emotions, they are compelled to eat and consume more sugar and fats and this causes eating disturbances. A comparative study by Swami et al. (2008) found low neuroticism and high extraversion and to be indicative of positive body image and vice versa.

In the present study, the correlation coefficient indicates a positive relationship between openness and risk of eating disorder. Previous studies regarding personality traits and disordered eating also validated these findings. The students scoring high on openness were experiencing more drive for thinness and body dissatisfaction as compared to students scoring low on openness factor (Miller et al., 2006). Ghaderi and Scott (2000) explored the big-five personality factors of individuals who are with eating disorders and have a lifetime course, and individuals who recently developed the disorder and then compared their traits with individuals having no account of eating disorder. Participants with eating disorders were high on openness. Furthermore, the present study showed a negative relationship between agreeableness and extraversion subscales of personality and risk of eating disorders. Consistent with the present research, Miller et al. (2006) found positive correlations between disordered eating and low levels of extraversion. Ghaderi and Scott (2000) showed that people with eating disorders scored low on agreeableness and extraversion.

The results of the present study showed that there are gender differences between both groups. In case of drive for thinness, girls scored high as compared to boys. Boys are low in bulimia as compared to girls and body dissatisfaction is higher among girls as compared to boys. Previous research also reported that girls show more disturbances as compared to boys in both clinical and community sample

(Striegel-Moore et al., 2009). Boys make up 10-15% of individuals who are diagnosed with bulimia nervosa (Johnson et al., 2001). Research has stated that men have less preoccupation with weight and weight control and greater difficulty with relationships as compared to women (Herzog et al., 2005). Results also revealed that participants belonging to nuclear family systems have higher risk of developing eating disorder as compared to joint family systems. A study by Stice (2002) indicated that people living in nuclear family systems may lack of family and social support and that is why they are more inclined towards maladaptive behaviors and suffer from psychopathologies such as depression, anxiety, and eating disorders. Pakistan, being a collectivistic culture, had a strong family support system but now-a-days, due to urbanization people are moving towards the nuclear family system and are becoming vulnerable for multiple health issues due to burden and lack of family support.

Individuals with higher BMI have more risk of developing eating disorder as compared to individuals with normal and lower BMI. One-way ANOVA between three groups of overweight, average and underweight individuals revealed significant differences. In case of personality traits, nonsignificant differences were found i.e. BMI is not significantly related with personality traits. Past literature advocated that body mass index (BMI) is strongly correlated with the onset of eating disorder. Body mass index is a significant feature associated with body dissatisfaction (Smolak, 2004). In one study, the effects of body mass index effects on eating disorders were investigated. Three categories of people constituted the sample based upon BMI ranges i.e. obese, underweight and average weighted individuals. They were assessed using eating disorder risk scales and BMI was calculated by weighing and height machines. Obese individuals were found to be high on body dissatisfaction, and compensatory behaviors to control weight such as vomiting, exercise, dieting and usage of laxatives as compared to individuals who had average weight. Smolak (2004) also reported that individuals with higher BMI tend to be more dissatisfied with their body and the effect is higher in girls as compared to boys. The presence of group differences indicated the role of contextual and factors on how an individual may behave in terms of risks and protective factors of eating disturbances.

Conclusions

The result of the present study signifies the importance of identifying the risk factors of eating disorders in college students. Not many researches are being done on these concepts in Pakistani society where many incidents of eating disorders are seen. This study sheds light on the various factors that lead towards dissatisfaction with body, drive for thinness and to unhealthy ways of reducing weight such as dieting, using laxatives or starve themselves to reduce weight which lead to risk of eating disorders. Neuroticism, openness and conscientiousness were positively related to risk of eating disturbances.

Limitations

Due to scarcity of the resources and time constraints, the sample was selected through purposive sampling, which is not a systematic technique of sampling and thus

less thorough. Self-report method of data collection from the study participants posed as another limitation, consequently, the results may be affected due to response bias. The study was restricted to the colleges of Islamabad and Rawalpindi only, which lowers the generalizability of the research. EDI questionnaire would be more suitable for clinical rather than healthy populations and this was accounted for in the interpretation of results as well.

Implications

The study may prove valuable in the field of social sciences and may have implications for counselors and psychologists in identifying the areas of concern that need to be explored with respect to risk of disordered eating patterns. These findings may also be applicable in clinical settings as this study pinpointed the risk and resilient personality traits associated with eating disorders. This will help in providing detailed clinical profile of person with eating disorder, informing accurate interventions. It is important to educate and assist students and their family members to identify and help those students who are going through transitional phase and have adopted unhealthy eating habits.

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