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Original Article

A Study of the Correlation of Personality Traits (Neuroticism and Psychoticism) and Self-efficacy in Weight Control with Unhealthy Eating Behaviors and Attitudes

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Abstract

Objective: The present study aimed to investigate the correlation of personality traits (neuroticism and psychoticism) and self-efficacy in weight control with unhealthy eating behaviors and attitudes. **Aims:** To compare therapeutic effect, toxicity profile and quality of life parameter 'Dysphagia' using EORTC OES 18 questionnaire in study population. **Methods:** In this descriptive-correlational study, 459 undergraduate students, in the 17-26 age range, were selected through the stratified random sampling at Razi University of Kermanshah, Iran, in the academic year 2015-2016. For data collection, the weight efficacy lifestyle questionnaire (WEL), Eysenck personality questionnaire (EPQ), and the eating attitudes test (EAT) were used. **Results:** The results of the present study revealed that there was a negative correlation coefficient between the unhealthy eating behaviors and each of neuroticism and psychoticism ($p<0.001$), whereas no significant correlation coefficients were observed between self-efficacy in weight control and unhealthy eating behaviors. Further, the results demonstrated that the predictor variables could predict the unhealthy eating behaviors. Accordingly, neuroticism and psychoticism could predict the unhealthy eating behaviors with the impact factors of -0.58 and -0.28, respectively. **Conclusion:** Therefore, it was concluded that personality traits played a role in unhealthy eating behaviors and attitudes.

Keywords: Personality; Self efficacy; Eating disorders; Body weight; Behavior control; Attitudes

Introduction

Eating disorders (ED) are serious diseases that affect one's well-being [1] because it has been revealed that eating behaviors play a crucial role in one's subjective well-being and the prevention of chronic diseases, such as cardiac diseases, diabetes, hypertension, strokes, cancer, and asthma. [2] The significance of this issue is to the extent that factors playing a role in the maintenance and development of unhealthy eating behaviors have now become a focal point for further studies. [1] The prevalence of unhealthy eating behaviors, especially among the youth, is on the rise, [3] causing growing concern on the minds of health guardians because these behaviors play a central role in the process of their growth and cognitive evolution. [2]

The unhealthy eating behaviors are abnormal behaviors that are linked with eating disorders, including restricted eating, disinhibited eating, eating at night, bulimia, weight and shape of the body, eating concerns, going on a strict diet, controlling the weight and shape of the body through compensatory behaviors. [4] Eating attitudes include beliefs, thoughts, feelings, behaviors, and factors associated with nutrition [5] that is usually used to describe unhealthy eating behaviors and beliefs and include a range of hard habits in nutrition. [6] Understanding this subject and its related factors can result in our more perception of food choices, food preferences, and especially understanding the attitudes and behaviors of patients with eating disorders, as well as the transparency of the clinical indicators of this group of patients. [7]

Research has shown that one's personality traits and eating styles and patterns are correlated. [8-11] For instance, unhealthy eating behaviors are prevalent among the neurotics and extroverts [8,11-13] whereas the ones with positive communication skills have proved more successful in the weight loss and eating control programs than those lacking these traits. [14] The results of these studies indicate that personality traits and health outcomes can be linked. [15]

Another concept that has attracted a lot of attention in weight control and coping with bulimia programs is the concept of self-

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efficacy [16] derived from the theory of Albert Bandura, according to which self- efficacy is seen as a construct whereby one's cognitive, behavioral, social and emotional skills are effectively organized towards the realization of various goals. In Bandura's view, self-efficacy is regarded as a crucial factor in the successful completion of functions. [17]. Additionally, self-efficacy is a predictive index of weight loss and unhealthy eating plans. [18]. The research shows that self-efficacy is a predictive index of weight loss, which is increased in the course of programs that are aimed at weight loss and weight gain prevention through providing motivation and adherence to behavior. Furthermore, self-efficacy is an important factor that should be strongly taken into consideration in the nutritional training and counseling programs towards weight loss and bulimia prevention. [19]. Therefore, the present study aimed to investigate the correlation of personality traits (neuroticism and psychoticism) and self-efficacy in weight control with unhealthy eating behaviors and attitudes due to the following reasons: I) University students are included among the most influential groups in any society, and the future of any nation lies in the hands of this group; II) The health status of this group has significant effects on their learning and increasing their scientific awareness and academic achievement; III) Almost 11-30% of university students are suffering from unhealthy eating behaviors; [4] IV) The studies into eating disorders have been mainly focused on patients, and not on university students; and V) No previous studies have investigated the mechanisms associated with eating disorders in this group yet.

Subjects and Methods

In this descriptive- correlational study, 459 undergraduate students, interested in participating in the research and in the 17-26 age range, were selected through the stratified random sampling at Razi University of Kermanshah, Iran, in the academic year 2015-2016. Each faculty was considered a separate cluster and then, a sample of 375 subjects was determined through the Cochran's sample size formula. Additionally, to increase the precision of the study, the aforementioned number was multiplied by 1.333 and the result was 500 subjects. Finally, because of lack of cooperation of the subjects as well as handing over incomplete questionnaires, 459 subjects were considered the basis of the final analysis [Figure 1]. The exclusion criteria included suffering from the gastrointestinal, diabetes, or mental diseases. All the selected subjects completely consented to participate in the study, and they were assured that their information would remain confidential. As for data collection, the weight efficacy lifestyle questionnaire (WEL), Eysenck personality questionnaire (EPQ) and the eating attitudes test (EAT) were used. Further, the questionnaires were completed individually and collectively in the presence of the researchers. Finally, the questionnaires were collected and then analyzed. As for data analysis, the SPSS Statistics 21 Software and the statistical methods of Pearson product-moment correlation coefficient, canonical correlation analysis, and regression analysis were used.

The Weight Efficacy Lifestyle Questionnaire (WEL)

This 20-item self-reporting instrument was first developed by Clark et al. to measure one's self-control abilities and confidence in refusing to eat under diverse circumstances among the obese people in the search for treatment. The total score and the score of each of the subscales were separately calculated. Further, the questions were replied based on a 10-point Likert scale (0= uncertain, 9= absolutely certain), and the subscales were as follows: negative emotions (questions 1, 6, 11, and 16), availability (questions 2, 7, 12, and 17), social pressure (questions 3, 8, 13, and 18), physical discomfort (questions 4, 9, 14, and 19), and positive activities (questions 5, 10, 15, and 20). To calculate the total score of this questionnaire, the scores of the questions were added together and divided by 20. To calculate the score of each of the subscales, the scores of the questions in the respective subscale were added together and divided by four. In addition, the score of each subscale could be in the range of 10 to 40, and the higher scores denoted low certainty. The overall validity of this instrument through test-retest was 0.91, and its overall reliability was in the range of 0.70 to 0.90. [20] In Iran was don a study for validate and investigate reliability of the WEL questionnaire that the reliability of this test (Cronbach's Alpha) for factors was between 0.71 to 0.78. [21].

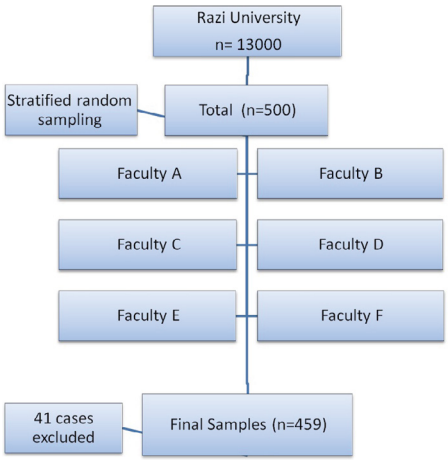

Figure 1: Sampling process.

The Eating Attitudes Test (EAT)

This widely used self-report 26-item instrument, developed by David Garner, was a measure for feedback on eating morbid disorders. The reported correlation of this test was 0.98. Besides, it consisted of three subscales: 1) dieting, 2) bulimia and food preoccupation, and 3) oral control. Further, the questions were replied based on a six-point Likert scale (0=sometimes, seldom, and never, 1= very often, 2= usually, and 3=always), and its overall score was in the range of zero to 78. In addition, the dieting subscale included the questions of 1, 6, 7, 10, 11, 12, 14, 16, 17, 22, 23, 24, and 25. The items of bulimia and food preoccupation subscale were 3, 4, 9, 18, 21, and 26. As for the oral control subscale, it included the questions of 2, 5, 8, 13, 15, 19, and 20. A score of 20 and higher denoted the likelihood of eating disorder. The validity and reliability of the questionnaire were 0.94 and 0.67, respectively. [22]. In Iran was don a study for validate and investigate reliability of the EAT that in confirmative factor analysis 3 factors (dieting, bulimia and food preoccupation, oral control) were confirmed. The reliability of this test (Cronbach's Alpha) was 0.86. [23]

The Eysenck Personality Questionnaire (EPQ)

This 90-item instrument had different forms, including forms

oriented towards children, adolescents and adults, which could be applied to people 16 years of age and older. This instrument asks yes-no questions on the four factors of extroversion, neuroticism, psychoticism, and lying. In some items, "yes" denoted "one point" and "no" represented "zero points," and in some other items, the reverse was assigned to each of the alternatives. Moreover, each of the four factors of extroversion, neuroticism, psychoticism and lying had 21, 23, 25, and 21 questions, respectively. The ones with high and low scores in extraversion were classified under 'extraverts' and 'introverts, 'respectively. In addition, the ones with high and low scores in neuroticism were classified as 'neurotics' and 'the ones with emotional stability,' respectively. The internal consistency of the questionnaire scales was quite satisfactory. The Cronbach's alphas for extraversion, neuroticism and lying were in the range of 0.79 to 0.85, and for psychoticism, it was in the range of 0.68 to 0.74. In addition, the reliability of extraversion, neuroticism and lying was in the range of 0.8 to 0.9, and for psychoticism, it was in the range of 0.71 to 0.83 (24). In addition, reliability of Persian version of EPQ was studied by retest method. The results showed for extraversion reliability is 0.92, for neuroticism is 0.89, and for psychoticism is 0.72. [24].

Results

The sample consisted of 459 subjects, of which 59% were male and 41% were female. The average age was 20.87±1.93. In Table 1, other descriptive characteristics of the variables under study have been mentioned in both sexes. The results of Table 1 showed that there was not a significant difference between male and female university students in terms of neuroticism and unhealthy eating behaviors, while there was a significant difference between the two groups in terms of the means of psychoticism and self-efficacy in weight control. In other words, the means of psychoticism and self-efficacy in weight control among female university students were higher than those among male students. To examine the correlation of personality traits and self-efficacy in weight control with unhealthy eating behaviors, the Pearson product-moment correlation coefficient was used [Table 2].

According to the results shown in Table 2, there was a correlation coefficient of -0.19 between psychoticism and dieting, which was significant at $p<0.001$. Also, these findings revealed that there was a correlation coefficient of -0.15 between neuroticism and dieting, which was significant at $p<0.001$. Finally, there was a correlation coefficient of -0.32 and -0.26 between the overall score of unhealthy eating behaviors and each of psychoticism and neuroticism, respectively, which was significant at $p<0.001$. However, there was not a significant correlation coefficient between the self-efficacy in weight control and the overall score of unhealthy eating behaviors.

The results of the canonical correlation analysis in Table 3 showed that the predictor variables could predict almost 0.31 of the combined variables of the subscales of unhealthy eating

Table 1: The means and STDVs of personality traits, self-efficacy, and unhealthy eating.

Variables		Female Mean ± SD	Male Mean ± SD	Total Mean ± SD	F	p-value
Psychoticism	Personality Traits	19.86 ± 3.41	18.03 ± 3.72	19.11 ± 3.65	29.47	0.001
Neuroticism		10.36 ± 4.71	10.85 ± 4.41	10.58 ± 4.59	1.25	0.27
Self-efficacy in WEL [a]		112.74 ± 30.46	104.23 ± 33.31	109.26 ± 31.90	8.02	0.005
Eating attitude		37.74 ± 7.47	38.04 ± 8.50	37.86 ± 7.91	0.15	0.69

a= Self-Efficacy in Weight Efficacy Lifestyle

Table 2: The correlation coefficients of personality traits and self-efficacy with unhealthy eating behaviours.

Eating attitude	Personality Traits		Self-Efficacy in Weight Efficacy Lifestyle					
	Psychoticism	Neuroticism	Negative emotions	Availability	Social pressure	Physical discomfort	Positive activities	Total
Diet	-0.19	-0.15	-0.07	0.08	0.08	0.003	0.04	0.05
	.23	.46	.95	.78	.60	.09	.001	.001
Overeating	-0.33	-0.28	-0.16	-0.17	-0.09	-0.18	-0.12	-0.2
	0.001	0.001	0.001	0.001	0.44	0.001	0.007	0.001
Oral control	-0.22	-0.16	0.08	0.16	0.14	0.07	0.14	0.17
	0.001	0.001	0.7	0.001	0.002	0.1	0.002	0.001
Total	-0.32	-0.26	-0.07	0.08	0.09	-0.02	0.09	0.04
	0.001	0.001	0.1	0.95	0.52	0.6	0.54	0.32

Table 3: The results of the canonical correlation analysis of the correlation of personality traits and self-efficacy in weight control with unhealthy eating behaviours.

Variables		Standardized coefficients	Structural coefficients	Shared variance
Personality traits	Psychoticism	-0.66	-0.87	Wilks Lambda=0.69
	Neuroticism	-0.48	-0.71	R^2 = 0.31
Self-efficacy in Weight Efficacy Lifestyle	Negative emotions	-0.22	-0.24	F= 8.54
	Availability	0.007	-0.07	P<0.001
	Social pressure	0.13	0.03	
	Physical discomfort	-0.16	-0.24	
	Positive activities	0.12	0.01	

behaviors. Psychoticism (with a standard coefficient of -0.66) could predict the eating attitudes more than other personality traits. To predict the unhealthy eating behaviors based on personality traits and self-efficacy in weight control, the regression analysis was used [Table 4].

The results of regression analysis in Table 4 showed that the predictor variables could predict 0.06 of the subscale of dieting. Accordingly, psychoticism (with a standard coefficient of -0.17) and positive activities (with a standard coefficient of 0.11) could predict the subscale of dieting. Moreover, the results revealed that the predictor variables could predict 0.18 of the subscale of bulimia and food preoccupation. Accordingly, psychoticism (with a standard coefficient of -0.23) and neuroticism (with a standard coefficient of -0.09) could predict the subscale of bulimia and food preoccupation. Additionally, the results demonstrated that the predictor variables could predict 0.10 of the subscale of oral control. Accordingly, only psychoticism (with a standard coefficient of -0.21) could predict the subscale of oral control. Further, the results showed that the predictor variables could predict 0.13 of the subscale of the total unhealthy eating behaviors. Accordingly, psychoticism (with a standard coefficient of -0.58) and neuroticism (with a standard coefficient of -0.28) could predict the subscale of the total unhealthy eating behaviors.

The correlation coefficients of psychoticism and neuroticism with unhealthy eating behaviors in both sexes showed that, among the female university students, there was a correlation coefficient of -0.25 between neuroticism and unhealthy eating behaviors and a correlation coefficient of -0.24 between psychoticism and unhealthy eating behaviors. However, among the male university students, there was a correlation coefficient of -0.29 between neuroticism and unhealthy eating behaviors and a correlation coefficient of -0.44 between psychoticism and unhealthy eating behaviors, indicating that the correlation coefficient between psychoticism and unhealthy eating behaviors among male university students was stronger than that among female university students. On the other hand, the results of regression analysis demonstrated that the mediating role of sex in the relationship between psychoticism and unhealthy eating behaviors was confirmed [Table 5].

Testing the moderating effects of sex

To test the moderating effects of sex in the relationship between psychoticism and unhealthy eating behaviors, a model of hierarchical regression analysis was used. In this model, to predict the criterion variable of unhealthy eating behaviors, the variables of sex and psychoticism were entered into the equation in the first step with the aim of controlling and separating the shares of psychoticism and sex variables from each other in predicting the unhealthy eating behaviors. In the first step, the results indicated that sex and psychoticism together could

Table 4: The results of regression analysis for predicting the unhealthy eating behaviours based on personality traits and self-efficacy in weight control.

Dependent variables	Model Summary	Predictors		B	β	P
diet	R= 0.24 R^2= 0.06 F= 9.16 P= 0.001	Personality traits	Psychoticism	-0.28	-0.17	0.001
			Neuroticism	-0.12	-0.09	0.07
		Self-efficacy in WEL [a]	Positive activities	0.7	0.11	0.02
Overeating	R= 0.43 R^2= 0.18 F= 14.5 P= 0.001	Personality traits	Psychoticism	-0.15	-0.23	0.001
			Neuroticism	-0.1	-0.09	0.001
		Self-efficacy in WEL [a]	Negative emotions	-0.02	-0.09	0.05
			Availability	-0.02	-0.08	0.13
			Social pressure	0.003	0.01	0.84
			Physical discomfort	-0.02	-0.09	0.08
			Positive activities	0.001	-0.006	0.91
Oral control	R= 0.32 R^2= 0.10 F= 10.30 P= 0.001	Personality traits	Psychoticism	-0.17	-0.21	0.001
			Neuroticism	-0.05	-0.08	0.08
		Self-efficacy in WEL [a]	Availability	0.03	0.11	0.06
			Social pressure	0.03	0.07	0.14
			Positive activities	0.02	0.08	0.12
eating attitude (total)	R= 0.32 R^2= 0.10 F= 10.30 P= 0.001	Personality traits	Psychoticism	-0.58	-0.27	0.001
			Neuroticism	-0.28	-0.16	0.001

a= Self-Efficacy in Weight Efficacy Lifestyle

Table 5: The results of regression analysis for investigating the mediating role of sex in the relationship between psychoticism and unhealthy eating behaviours.

Step	Model Summary	Predictors	B	β	P
1	R= 0.33 R^2= 0.11 F= 28.68 P= 0.001	Sex	-1.07	-0.07	0.15
		Psychoticism	-0.75	-0.34	0.001
2	R= 0.35 R^2= 0.12 F= 21.15 P= 0.001	Sex	7.66	0.48	0.04
		Psychoticism	-0.07	-0.03	0.81
		Sex × Psychoticism	-0.46	-0.56	0.02

behaviors. Psychoticism (with a standard coefficient of -0.66) could predict the eating attitudes more than other personality traits. To predict the unhealthy eating behaviors based on personality traits and self-efficacy in weight control, the regression analysis was used [Table 4].

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To test the moderating effects of sex in the relationship between psychoticism and unhealthy eating behaviors, a model of hierarchical regression analysis was used. In this model, to predict the criterion variable of unhealthy eating behaviors, the variables of sex and psychoticism were entered into the equation in the first step with the aim of controlling and separating the shares of psychoticism and sex variables from each other in predicting the unhealthy eating behaviors. In the first step, the results indicated that sex and psychoticism together could explain 11% of the changes of the unhealthy eating behaviors, whereas sex alone could not do so. In the second step, the multiplicand, i.e., sex multiplied by psychoticism, was entered into the equation, which could explain 12% of the criterion variable. The results of studying the standardized regression coefficients showed that the shares of sex ($p<0.04$) and the multiplicand ($p<0.02$), i.e., sex multiplied by psychoticism, in predicting the unhealthy eating behaviors were significant, whereas the share of the psychoticism variable alone was not ($p<0.81$).

Discussion

The present work was a cross-sectional study, which aimed to investigate the correlation of personality traits (neuroticism and psychoticism) and self-efficacy in weight control with unhealthy eating behaviors and attitudes. The results of the present study indicated that the unhealthy eating behaviors were related to neuroticism and psychoticism. To put it another way, the more one's neuroticism and psychoticism features, the more one's unhealthy eating behaviors and attitudes will be, and vice versa. The results also showed that there was a significant correlation coefficient between dieting and psychoticism. In addition, there was a significant correlation coefficient between dieting and neuroticism, too. This result was consistent with the results of previous studies.[10,13,25] In a similar study carried out on the Iranian students, it was concluded that neuroticism and symptoms of eating disorders were connected.[26] The results of another study revealed that eating disorders were observed among the neurotics.[27] Walker et al. also found out that neuroticism played a crucial role in eating behaviors and patterns.[28] These results were confirmed in another study.[29] To explain the results, it should be noted that neurotics are often excessively dissatisfied with sensitive matters and affairs, and they may be inclined to eating disorders and unorthodox eating methods due to dissatisfaction with their bodies and high sensitivity to their appearance.[30]

The results of other studies have shown that disorders like schizophrenics, paranoid and similar cases are not rare among the ones suffering from eating disorders.[31] Similarly, the results of an Italian study using the MMPI questionnaire indicated that psychoticism and eating disorders are correlated.[32] In another study, it was revealed that the ones suffering from eating disorders got higher scores in the psychotic items of the SCL90 questionnaire than the control group.[33] However, in a study performed by Muaro et al., it was shown that eating control among those with bulimia was directly related to diversity seeking and negatively related to conscientiousness, order, discipline, and conscience. In addition, no relation was found between eating control and personality traits in both groups, which was inconsistent with the results of the present study.[34] It is noteworthy that one of the differences of the present study with the previous ones is that the previous studies have used the five-factor personality traits questionnaire, MMPI, and SCL90 to measure the personality traits, while the present study used the Eysenck personality questionnaire (EPQ) to this end.

Further, the results of this study showed that self-efficacy in weight control and unhealthy eating behaviors and attitudes were related. Also, the results indicated that there was a positive correlation between dieting and positive activities, indicating that bulimia, negative emotions, access, social pressure, physical discomfort, positive activities and the total score were correlated. Numerous studies have been conducted into the role and effects of self-efficacy on diets and eating control, indicating that the ones suffering from bulimia have low self-efficacy.[35] In a study performed on the role of self-efficacy

in bulimia, it was concluded that access to food and negative emotions were strong predictors of eating disorders, [36] while this result was not concluded in the present study. The results of the present study were concurrent with the results of some other previous studies. [37,38].

The results of the previous research indicated that self-efficacy was a predictive index of weight loss and overeating control, which increased during the treatment. One experiencing fluctuations in the eating pattern typically have low self-efficacy. [37,38]. Moreover, the results of this study showed that the mediating role of sex the relationship between psychoticism and unhealthy eating behaviors was confirmed, indicating that the effects of psychoticism on unhealthy eating behaviors were more manifest among males. In addition, this personality trait, i.e., psychoticism, has more destructive effects on unhealthy eating behaviors among men. This may be due to the cultural issues in the population under study that expects more social behaviors be displayed by men and their presence is felt more and confirmed in the society.

Strengths and limitations

Not to mention, the present study had several limitations, including the use of self-assessment instruments and lack of quality assessment, leading to bias in the responses, which should be taken into consideration. Given the lack of studies in this field, it was recommended that further studies be carried out in various groups, especially patients. Finally, because of the cultural, social and economic differences of the research sample, i.e., university students, the generalizability of the results must be treated with the utmost caution.

Conclusion

The results of the present study demonstrated that all predictor variables together could predict bulimia and oral control. In addition, the results of regression analysis indicated that all predictor variables together could predict the overall unhealthy eating behaviors. Furthermore, the results of the canonical correlation analysis showed that the predictor variables could predict the combined variables of the subscales of unhealthy eating behaviors. Psychoticism could predict the eating attitudes more than other personality traits. Given that the results of the present work showed that psychoticism and neuroticism were more capable of prediction compared to the subscales of self-efficacy, the therapists and psychologists should take this point into consideration, and the results of the present study can pave the way for dealing with their clients' eating disorders. Since the determination of the type of personality in many cases clarifies the roots of mental diseases and how they are spread, [39] taking this point into consideration concerning the unhealthy eating behaviors can also be helpful.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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