

EXPLORING THE PREDICTIVE ASSOCIATION OF BIG FIVE PERSONALITY TRAITS WITH PSYCHOLOGICAL DISTRESS AMONG UNDERGRADUATE UNIVERSITY STUDENTS

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ABSTRACT

The objective of this study was to assess the predictive association among the big five personality traits and psychological distress among undergraduate students. The study also explored the frequency of Psychological Distress among undergraduate students. The hypothesis of the study were a) big five personality traits would predict the level of psychological distress among undergraduate students. b) there would be a higher prevalence of psychological distress among undergraduate students c) the level of psychological distress would be higher among female undergraduate students as compared to their male counterparts. The sample of the study consisted of 480 participants within the age range of 18-24 years from various departments of the University of Karachi. Participants were selected using purposive-convenient sampling technique. The measures used in the study were demographic form, big five inventory (John et.al, 2008) and the depression anxiety stress scale (Lovibond & Lovibond, 1995). With reference to the frequency of mental health problems, 52.70%, 67.70% and 40.62% undergraduate university students reported moderate to extreme level of depression, anxiety and stress, respectively. Findings are reflective of significant differences between male ($M=45.5$, $SD= 22.8$) and female ($M=49.8$, $SD= 29.7$) undergraduate students on the domain of Psychological distress ($t(477) = 1.959$, $p < .05$) showing that the level of psychological distress is higher in female students as compared to male students. Regarding the predictive association among big five personality traits and psychological distress, findings reflect a significant predictive impact of agreeableness ($R^2 = .028$, $F=13.7$, $P < .001$), conscientiousness ($R^2 = .034$, $F=16.7$, $P < .001$) and neuroticism ($R^2 = .158$, $F=89.8$, $P < .001$) on psychological distress among undergraduate students. In addition agreeableness and conscientiousness were found to be negative predictors causing 2.8 % and 3.4 % variance in the scores of psychological distress respectively. Conversely, neuroticism was found to be a positive predictor of psychological distress among undergraduate students causing 15.8 % variation. However extraversion ($R^2 = .006$, $F=13.7$, $P > .001$) and openness to experience ($R^2 = .000$, $F=.000$, $P > .001$) were found to be insignificant predictors of psychological distress among undergraduate students. The finding of the study highlights the importance of personality traits and its impact on the psychological well-being of students. These finding can be utilized for effective treatment planning in the domain of student counseling.



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Keywords: *openness, conscientiousness, extraversion, agreeableness, neuroticism, psychological distress, undergraduate student*

Introduction

Introduction

University life is a crucial period with reference to the personality development and psychological well-being (Lee et al., 2012). The university students are vulnerable to various mental health issues as they are simultaneously dealing with academic challenges, future career choice and financial liabilities. These challenges can contribute to increased levels of stress and tension among the students and it can impact their psychological well-being (Barbayannis et al., 2022). Studies conducted on this topic previously reported lowered well-being among the university students and there is an increased need for mental health and counseling services (Mofatteh, 2020). A systematic review conducted on students well-being found that 30 % university students met the clinical criteria for mental health issues including depression (Ibrahim et al., 2012).

The big five personality model is used to study the differences in personality (McCrae & Costa, 1987). It comprises of five dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. These dimensions represent the personality characteristics and explain the individual differences in thinking, feeling and behavior (Costa & McCrae, 1992). Extraversion is a trait that reflects an individual's outgoing, energetic and socially competent nature (Swickert et al., 2002). Individual high on extraversion likes to participate in social activities. On the other hand introverts prefer to spend time alone. Agreeableness reflects an individual approach towards others including kindness, cooperation and altruism (Graziano & Tobin, 2019). High agreeableness in an individual fosters empathy and social harmony. In contrast low agreeableness reflects hostility, skepticism and competition. Conscientiousness depicts characteristics of responsibility, discipline and orderliness. Individual high on Conscientiousness are organized and detail oriented (Peabody & Raad, 2002). On the other hand, individuals who are low on conscientiousness are impulsive and unreliable.

Neuroticism is a personality trait characterized by emotional instability and vulnerability to stress. High neuroticism illustrates mood swings, irritability, low mood and anxiety in an individual (Revelle, 2016). Low neuroticism depicts calmness and stability in emotions. Finally openness to experience characterizes curiosity, originality, and receptiveness to new ideas. Individual high on this trait pursue new experiences whereas individuals low on openness trait resist change and prefers routine (McCrae & Costa, 1997).

Psychological Distress comprises of symptoms of depression, anxiety and stress. Higher levels of psychological distress are reflective of decreased mental wellbeing and may point towards the risk of developing common mental health issues including depression, anxiety and coping deficits (Cuijpers et al., 2009).

The Big Five model of personality has been extensively investigated with reference to distress and negative affectivity (Strickhouser et al., 2017). The predictive studies conducted on Big Five personality traits and depression put forth that big five personality factors are responsible for causing one third of variations in the depression levels (Quilty et al., 2012), and the major variations were caused by neuroticism as a risk factor and extraversion and conscientiousness as protective factors in predicting depression ((Kotov et al., 2010); Strickhouser et al., 2017).

Previous literature on personality traits have often proposed that a high proportion of students may possess a personality trait which increases their vulnerability to psychological distress, hence leading them towards mental health problems (Lewis & Cardwell, 2020). A well-studied personality trait Conscientiousness has been found to be associated with better psychological well-being and adaptive coping strategies (Connor-Smith & Flachsbart, 2007). A longitudinal study conducted over a span of 12 years was done on medical students of UK found that low levels of conscientiousness and extraversion and high levels of neuroticism were predictive of higher stress and burn out in students (McManus et al., 2004). Similarly

another longitudinal study conducted over a period of 6 years in Norway found that the personality traits of high neuroticism and high conscientiousness along with low extraversion tend to predicted high stress levels in medical students (Tyssen et al., 2007). These studies explain the complex association between environmental factors, personality traits and vulnerability towards psychological distress.

The prevalence of mental health problems is increasing day by day and recent findings related to mental health has shown a significant increase in mental health disorders and psychological distress worldwide (Alonso & Lepine, 2007). Gender differences in psychological distress are well documented in literature. The differential exposure hypothesis suggests that gender difference in psychological health is particularly related to the differences in social exposure and gender roles in the society (Graham 2009).

Epidemiological researches on mental health have documented considerable high levels of anxiety and depression among females as compared to males (Kuehner, 2003; Pigott, 1999). On the other hand, high levels of externalizing disorders and substance use disorders are found among males as compared to females (Brady & Randall, 1999). The latter asserts that gender differences in the prevalence

Measures

The Demographic Information Form

The demographic information form comprised of the fundamental basic details of the participants such as gender, age, birth order, socioeconomic status, department, faculty, educational year, number of months/ years spent in university, and any diagnosed medical or psychological illness.

The Depression, Anxiety and Stress Scale-42 (DASS-42) (Lovibond & Lovibond, 1995)

of mental disorders are due to differences in the typical stressors, coping resources, and opportunity structures for expressing psychological distress made available differentially to women and men in different countries at different points in history (Pape, Hammer & Vaglum, 1994 ; Thoits, 1986).

Methods

Sample

It was a cross-sectional analytical study and data was collected from a total of 480 undergraduate university students, among which 240 (50%) were male and 240 (50%) were female participants. The age range of the participants was 18 to 25 years with the mean age of 21.11 (SD= 1.90). Participants were selected from various departments of the University of Karachi using purposive sampling technique.

Data was exclusively collected from those participants who were between the age ranges of 18 to 25 years, currently enrolled in any undergraduate regular program of University of Karachi, have spent at least three months in University of Karachi and consented to voluntarily participate in the study. Participated outside the range of 18 to 25 years, having <3 months in university, having any diagnosed medical or psychological condition and not willing to participate were excluded.

The DASS-42 is a reliable and valid measure of psychological distress. It is a 42-item self-report scale with three subscales designed to assess the negative emotional states, namely; Depression, Anxiety, and Stress. Each subscale is comprised of 7 items in which respondent is required to rate their feeling over the past week at 4-point rating scale ranges for 0= Did not apply to me at all to 3= Applied to me very much or most of the time. The scoring of the DASS-42 involves adding up the scores of each subscale, resulting in a total score ranging from 0 to 126.

Table 1 Summary of Demographic Characteristics of the Sample (N=480)

Variables	N	%
Gender		
Male	240	50%
Female	240	50%
Birth Order		
First born	153	31.87%
Middle born	199	41.45%
Last born	124	25.83%
Only child	04	0.83%
Education		
BS 1st Year	103	21.4%
BS 2nd Year	94	19.5%
BS 3rd Year	171	35.6%
BS Final Year	112	22%
Department		
Science	246	59%
Humanities	126	30%
Management Sciences	33	8 %
Socioeconomic Status		
Upper	35	8.5%
Middle	364	88.5 %
Lower	10	2.5%

Higher scores indicate higher levels of depression, anxiety, and stress with conventional severity labels i.e. normal to extremely severe.

The Big Five Inventory (BFI) (John et.al, 2008)

The Big Five Inventory (BFI) is a self-report personality inventory developed to measure the Big Five personality traits i.e. Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness (Costa & McCrae, 1992). The BFI is a 44 item inventory, with 8 items for each of the five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism). In this inventory respondent is asked to rate each of the statement on a 5-point Likert scale ranging from 1 (disagree strongly) to 5 (agree strongly). The scoring of BFI involves adding the scores of each subscale (after reverse

scoring of specific items). High scores suggest the presence of specific personality trait.

Procedure

The process of data collection was started by following the ethical code of conducts and approval of the higher authority of concerned faculty of University of Karachi. Ethical considerations were given high priority, and the study was conducted with utmost care and professionalism. While approaching the participants, verbal and written informed consent was obtained from each participant, and they were assured that their information would remain confidential. The participants were informed that their participation was voluntary, and they had the right to withdraw from the study at any time. After obtaining the formal consent of participants, a three-stage questionnaire i.e. demographic information form, DASS-42 and BFI was provided to the participants to get their responses. The anonymity and confidentiality of the participants were preserved by not revealing

their names and identity in the data collection, analysis, and reporting of the study findings. After the process of complete data collection the standardized procedure of scoring for each of the scale was followed for further statistical analysis.

Statistical Analysis

The data of present study was analyzed using SPSS V-22. The demographic information of the sample was summarized via descriptive statistics i.e. frequency, percentage, mean and standard deviation. Moreover, to assess the predictive relationship of big five personality traits with psychological distress the linear regression was applied. To identify the gender difference on the variable of psychological distress Independent sample t-test was applied.

Results

Findings reflect a significant predictive impact of agreeableness ($R^2 = .028$, $F=13.7$, $P<.001$), conscientiousness ($R^2 = .034$, $F=16.7$, $P<.001$) and neuroticism ($R^2 = .158$, $F=89.8$, $P<.001$) on psychological distress among undergraduate students. In addition agreeableness and conscientiousness were found to be negative predictors causing 2.8 % and 3.4 % variance in the scores of psychological distress respectively. Conversely, neuroticism was found to be a positive predictor of psychological distress among undergraduate students causing 15.8 % variation. However extraversion ($R^2 = .006$, $F=13.7$, $P>.001$) and openness to experience ($R^2 = .000$, $F=.000$, $P>.001$) were found to be insignificant predictors of psychological distress among undergraduate students.

Table 2 Linear regression analysis of big five personality traits as a predictors of psychological distress among undergraduate students

	R	R ²	Adj.R ²	F	B	SE	β	P
Agreeableness	.167	.028	.026	13.7	-.678	.483	-.167	.000*
Extraversion	.076	.006	.004	2.74	-.324	.195	-1.65	.098
Conscientiousness	.184	.034	.032	16.7	-.829	.203	-.184	.000*
Neuroticism	.398	.158	.157	89.8	1.72	.182	.398	.000*
Openness to experience	.001	.000	-.002	.000	.004	.182	.001	.098

*n=480, P<.000 **

Table # 4 is showing the Finding examining the prevalence of mental health problems. The results depicted that 47 % participants reported normal to mild level of depression, 23 % participants reported moderate level of depression and 29 % participants reported severe level of depression. 32 % participants reported normal to mild level of anxiety, 18 % participants reported moderate level of anxiety and 50 % participants reported severe level of

anxiety. Similarly 59 % participants reported normal to mild level of stress, 23 % participants reported moderate level of stress and 17 % participants reported severe level of stress.

Table 3 Frequency of depression, anxiety and stress among undergraduate students (N=480)

	Low to Mild		Moderate		Severe to extreme	
	N	%	n	%	N	%
	Depression	227	47	112	23	141
Anxiety	155	32	84	18	241	50
Stress	285	59	111	23	84	17

The level of psychological distress would be higher in among female undergraduate students as compared to their male counterparts. Findings of the independent sample t test reflect significant differences between male and female

students on the domain of Psychological distress ($t= 1.959, p< .05$) showing that the level of psychological distress is higher in female students as compared to male students.

Table 4 Independent Sample t-test to identify the difference between male and female students on the variable of Psychological distress (N = 480)

Groups	N	Mean	SD	t-value	Df	Sig (2-tailed)
Female Students	240	49.88	25.75	1.959	477	.036*
Male Students	240	45.52	22.81			

$p < .05$

Discussion

The present study was aimed to study the impact of big five personality traits on psychological distress among undergraduate students. Findings suggest that agreeableness, conscientiousness and neuroticism predict psychological distress among undergraduate university students. In addition, agreeableness and conscientiousness were found to be the negative predictors of psychological distress. Conversely, neuroticism was found to be a positive predictor of

psychological distress among undergraduate students. However, extraversion and openness to experience were found to be insignificant predictors of psychological distress.

The findings of present study strongly align with the prior empirical work of Digman (1995) and DeYoung (2002). In which they advocated the idea of Big Two Personality model that is made up of higher-order factor and second higher-order factor. According to these research scholars (DeYoung, 2006; DeYoung et al.,

2002; Digman, 1995) the big-five personality trait dimensions are not orthogonal factor, rather they are mutually exclusive from each other. They suggested that out of big-five personality dimensions, three of them are jointly exhaustive i.e. agreeableness, conscientiousness and neuroticism that formulate the higher-order factor of personality, also regarded as the *Stability* factor. On the other hand, the dimensions of extraversion and openness to experience formulate the second higher-order factor, also regarded as *Plasticity* factor. The factor of stability is mainly based on the disposition of socialization, in which one displays the attributes of controlling impulses, stress coping and dealing with negative emotions and conforming to social norms and maintaining adequate interpersonal relationships. On contrary, the factor of plasticity is based on the disposition of personal growth which involves that attributes of challenging social norms, adapting to complex situation, flexibility, and desire to explore and seeking out stimulating activities. Digman (1995) advocated this connotation based on health outcomes rather than a basic personality trait. Similarly, DeYoung (2006) found that the traits of stability i.e. agreeableness, conscientiousness and neuroticism are strongly predict the mental health outcomes, rather than the traits of plasticity.

The present study findings support the second hypothesis and overall it was revealed that 52.70%, 67.70% and 40.62% undergraduate university students reported moderate to extreme level of depression, anxiety and stress, respectively, regardless any other variable such as gender or academic year. These findings further contribute to the local and foreign existing literature that psychological distress is relatively more prevalent and persistent among students as compared to general population (Bibi et al 2024; Ibrahim et al., 2012; Lee et al., 2012; Mofatteh, 2020). One possible explanation for this higher prevalence of psychological distress among undergraduate university students might be the positive correlation between perceived academic stress

(such as academic performance, grading, workload and academic self-perception) and psychological wellbeing (Barbayannis et al., 2022; Mofatteh, 2020). Research evidence further argue that this prevalent and persistent pattern of psychological distress among university students might be due to limited coping strategies (Lee et al., 2012), lack of treatment resources or the persistence of existing risk factor such as low self-esteem, personality traits and social and emotional isolation (Bibi et al 2024; Mofatteh, 2020). Regarding personality traits, it is alluded that the interplay of low extroversion and high on neuroticism and conscientiousness are the strongest risk factors for psychological distress among students population (Mofatteh, 2020; Tyssen et al., 2007). In academic domain, university environment is considered as a diverse environment where students come from variety of background along with the different challenges such as family issues, financial stressors, and childhood traumas and so on. That ultimately makes them vulnerable towards developing or exacerbating psychological issues when they experience academic stress. Moreover, the attitude of teacher, mentorship and university policies can further be the source of students' wellbeing (Mofatteh, 2020).

The findings of present study also support the third hypothesis and it was appeared that female students showed significantly higher level of psychological distress as compared to male students. The findings of present study align with prior empirical evidences (Ibrahim et al., 2012; Jamali et al., 2024; Tyssen et al., 2007) suggesting that gender is the stronger predictor of psychological distress among university students and female students report relatively higher level of stress as compared to male counterparts. It is observed that the gender difference in response to psychological distress is the result of variation in stress reactivity that ultimately contributes to the utilization of coping mechanisms and high prevalence of internalizing or stress related disorders among females (Brady & Randall, 1999; Kuehner, 2003; Pigott, 1999). Moreover, research

evidences suggest that female students tend to perceive higher level of academic stress as compared to their male peer group (Barbayannis et al., 2022).

Limitations and suggestions for future research

The findings of present study provide the insightful data related to Big-five personality traits in relation to psychological distress. However, the scope of variables in this study is very constricted. It only addresses the predictive association of Big-five personality traits and psychological distress. However, there can be a third or mediating factor that can further explain the mental health outcomes among undergraduate university students such as childhood and adolescents' personality factors of participants, coping skills, perceived social support and attachment styles. To study personality distress in relation to mental health outcome there is need to focus on longitudinal study that how personality traits changes overtime in relation to environment and its impact on mental health outcomes. Another limitation of this study is the single institution data, that the data of present research was only collected from University of Karachi. That ultimately constricts the external validity of the study. Future research should aim to study the temporal effect of the personality traits, with

other associated factors and in a varied setting to increase the understanding and scope of Big-five personality traits and psychological distress.

Implication of the study

The present study's findings serve a basic framework to facilitate mental health of undergraduate university population. This study highlights the fact that the university administration and policy makers need to take serious measures to combat the psychological distress and enhance wellbeing among university students. So the findings of present study can provide the preliminary data to adopt any intervention strategy. Moreover, these findings can be used in future research work to understand the predictive association of Big-five personality traits and psychological distress.

Conclusion

Overall, this study highlights that the undergraduate university students are at-risk population for mental health problems. The finding of the study highlights the importance of personality traits and its impact on the psychological well-being of students. In addition, female students are highly vulnerable to develop psychological distress as compared to their male counterparts. These finding can further be utilized for effective intervention planning in the domain of student counseling.

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