

BIG FIVE PERSONALITY TRAITS AS PREDICTORS OF INDIVIDUAL INNOVATIVENESS AMONG UNIVERSITY STUDENTS IN A COLLECTIVIST CULTURE

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KEYWORDS

Big Five Personality Traits,
Individual Innovativeness,
University Students, Collectivist
Culture

CITE THIS ARTICLE:

Aftab, N., Naz, S., & Rasheed, R.
(2026). Big five personality traits as
predictors of individual
innovativeness among university
students in a collectivist culture.
Pakistan Journal of Positive
Psychology, 3(3), 44–53.

ABSTRACT

This study investigates the relationship between the Five Factor Model personality dimensions and individual innovativeness among university students within a collectivist cultural setting. Grounded in trait theory and the diffusion of innovations framework, the research examines how extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience relate to and predict individual innovativeness, while also exploring gender differences. Utilizing a quantitative correlational design, data were collected from university students using standardized psychometric instruments. The findings demonstrate that extraversion, agreeableness, and openness to experience serve as significant positive predictors of individual innovativeness when controlling for shared variance, highlighting the importance of interpersonal communication and cooperative behaviors in collectivist environments. Conversely, neuroticism exhibited a negative bivariate relationship with innovativeness, and male students reported higher levels of innovativeness compared to female students. The findings underscore the critical role of personality dynamics in shaping innovative tendencies and offer practical implications for student counseling, collaborative learning initiatives, and educational policy in higher education institutions within collectivist societies.

I. INTRODUCTION

The term personality refers to lasting psychological traits that influence how individuals view the world around them, interpret and comprehend information, and respond with behavior under different circumstances. The Five Factor Model of personality, known as the Big Five personality model, has emerged as the most accepted theoretical approach that comprehensively identifies and explains personality structure (Husain et al., 2025). The Five Factor Model is made up of five major traits, which include extraversion, which is characterized by social engagement; agreeableness, defined by cooperation and interpersonal warmth; conscientiousness, involving organization and achievement drive; neuroticism, involving emotional instability and reactivity to environmental stress; and openness to experience, which involves creative imagination and receptivity (Husain et al., 2025). The universality of the model has been validated through decades of empirical research across several cultures, making it the gold standard in personality studies. Innovativeness, which is defined as the extent to which an individual adopts new concepts, procedures, or products relatively earlier than others from the same social environment (Montes de Oca Munguia et al., 2021), has become a characteristic that is of great value for personal and societal reasons. In the education setting, innovative students exhibit better abilities to think critically and solve problems

creatively and adaptively, which not only helps them to develop academically but also contributes to the overall knowledge society. Societies with more innovative individuals enjoy greater economic prosperity and technological and social advancements. It is therefore essential to know how psychological factors motivate or inhibit individual innovativeness, especially in developing countries such as Pakistan.

A number of theories have been used to establish the relationship between personality and innovativeness. Diffusion of innovations theory classifies people into innovators, early adopters, early majority, late majority, and laggards based on the psychological makeup of the person, which determines his/her place in this adoption continuum. Trait theory adds another dimension by determining personality traits that make a person more innovative. People who are extroverts are more likely to be innovative as they are always willing to experience new things socially and share their thoughts. Individuals who are agreeable are more likely to be innovative because of cooperative group work. Conscientious individuals are able to put their creative ideas into practice through hard work. Neurotic individuals may not be innovative because of fear and risk aversion. Openness to experience is the trait of personality that is related to innovation most directly. Even though considerable theoretical arguments and empirical evidence exist regarding these associations, past literature provides conflicting results. While one set of researchers found a significant positive correlation between openness and innovation, another set of researchers found an inverse relationship in some populations. There is even more controversy surrounding the association between conscientiousness and innovation because some researchers have found that conscientiousness, which promotes order and conformity to the rules, can actually stifle creativity (Monge Lopez et al., 2023). Moreover, almost all the past research on personality and innovation has been carried out in Western, individualistic countries. Expanding upon the applicability of the Big Five framework in South Asian settings, Ali (2018) investigated the direct impact of personality traits on individual innovativeness among university students in Pakistan, confirming that extraversion, agreeableness, conscientiousness, and openness to experience positively predict innovativeness.

Pakistan offers a particularly significant setting for examining the relationship between personality and innovation. Knowing how personality traits connect to innovative potential has immediate consequences for educational policy and economic development as a developing country with a sizable young population and an increasing emphasis on higher education. Strong collectivist ideals, respect for authority, and gender role distinction are characteristics of Pakistani culture that may limit how personality traits show themselves as creative behaviour. Prior indigenous research in Pakistani academic and professional environments corroborates these dynamics. Ahmed et al. (2010) established that personal traits and innovativeness serve as critical psychological drivers among university graduates in Pakistan, while Farrukh et al. (2018) further demonstrated through structural equation modeling that personality traits significantly shape entrepreneurial and innovative intentions within Pakistani university cohorts. Pakistani university students are in a transitional developmental stage where personality traits and educational experiences interact to influence life outcomes and job paths. The current study attempts to fill this gap through the investigation of the association between Big Five personality dimensions and innovativeness of Pakistani university students. The current study has the following three goals: (a) to explore correlations between personality dimensions and innovativeness of individuals; (b) to explore whether personality predicts innovativeness; and (c) to explore gender differences in personality dimensions and innovation level. The theoretical framework for this study is based on the Five Factor Model and Diffusion of Innovations Theory (Montes de Oca Munguia et al., 2021).

The Five Factor Model has been developed over several decades of lexical and statistical studies leading to the discovery of five major dimensions of personality that explain almost all individual differences in people's behavior. The measurement of these dimensions is provided by the development of NEO Personality Inventory that is currently the most popular instrument in personality studies. Extraversion includes such aspects as sociability, assertiveness, excitement-seeking, and positive emotions. People with high extraversion score actively seek social interaction, draw their strength from social contact and usually have an optimistic outlook on things. Agreeableness refers to the interpersonal orientation of people on the scale ranging from compassion and cooperation to antagonism and competition. Agreeable people show such qualities as trust, altruism, obedience and friendliness during their social interaction. This characteristic promotes team spirit and collaboration which are necessary components of innovation process. Conscientiousness characterizes people's organization, reliability

and achievement orientation. It has been repeatedly proven to be the best predictor of success in academic and professional life (Mammadov, 2021). The term neuroticism relates to the ability of an individual to feel emotions such as anxiety, sadness, aggression, and emotional instability. Neurotic individuals are often emotionally unstable and very responsive to any stress, which can affect their performance in certain situations. On the other hand, openness to experience involves intellectual curiosity, aesthetic interests, and the willingness to try new things. The latter has been theoretically considered the personality trait closest to creativity (Zell & Lesick, 2021). One key issue in the current study is that of the influence of culture on the expression of personality traits. Though there are ample examples to show the validity of the Big Five factors across various cultures, yet the mean and expressions of these personality traits tend to vary widely from culture to culture. In collectivist societies like that of Pakistan, the importance of personality traits such as agreeableness and conscientiousness might be different from their importance in Western individualistic societies.

Various researchers have examined the relationship between personality traits and innovation through various settings such as education, organizations, and entrepreneurship. Sowmya et al. (2023) used a mixed method in exploring the effect of Big Five personality traits on Generation-Z's innovation technology adoption intentions. In their quantitative research involving 436 subjects, they found out that openness to experience was the most important factor affecting intention for innovation adoption intention, followed by extraversion and agreeableness. The moderating factors were personal innovation and hedonic motivation. Al-Ghazali et al. (2022) proved that Big Five personality traits affect self-efficacy and attitudes toward entrepreneurship among 270 Saudi university students. Extraversion and openness were identified as the most important factors affecting innovation mentality. Awwad & Al-Aseer (2021) examined the effect of Big Five personality traits on entrepreneurial intention among 323 Jordanian university students by employing partial least squares structural equation modeling. According to the findings of this study, conscientiousness and openness had a significant relationship with entrepreneurial intention, a concept that bears conceptual similarity to individual innovativeness. In addition to this, extraversion and openness had a relationship with entrepreneurial alertness, which mediated their relationship with entrepreneurial intention. Filenko et al. (2026) conducted a complete research on innovative potential among 331 Russian university students, where they identified four different clusters namely, Proactive Innovators, Adaptive Innovators, Conservatives, and Non-Adaptive Conservatives.

Siyahtas et al. (2025) carried out a study on personality traits and innovation perceptions of 241 students studying sports science in Turkey, revealing that conscientiousness was the most prominent personality trait, and students with poor innovation perception belonged to the category of late majority. Rahman et al. (2023) studied the relationship between the Big Five Personality Traits and innovation abilities in 220 Islamic education students, identifying significant correlations between the personality dimensions and innovation abilities. Abdullah and Gull (2024) conducted research on the relationship between personality traits, emotional intelligence, and innovative behavior among 331 leaders in the software industry of Pakistan, showing that all the five personality traits had a significant effect on innovative behavior, and emotional intelligence was the mediating factor. Furthermore, studies examining creativity, self-efficacy, and psychological capital in Pakistan (Batoool et al., 2015; Abbas & Raja, 2015) as well as recent investigations into cognitive and behavioral intents among Pakistani student samples (Khawar et al., 2022) underscore the vital necessity of evaluating indigenous psychological predictors in higher education.

Educational innovation was studied by Monge Lopez et al. (2023), who designed a model of the prediction of innovation based on personality traits using 1,040 teachers of Spain as the sample; openness to change, social boldness, liveliness, and affability were revealed as important predictors of innovation factors. Lopes et al. (2025) showed that the Big Five personality traits have an impact on digital innovation attitudes of 417 students in higher education in Portugal, although the effect of personality traits on digital entrepreneurial intention is significant only when mediated by digital innovative attitude. Hu et al. (2023) found out that the Big Five personality traits affect important competencies such as creativity and collaboration of 1,132 Chinese college students, with the mediating effect of psychological capital. Kılıç et al. (2024) discovered a link between proactive personality and individual innovativeness of Turkish university students. As recently stated through a three-level meta-analysis performed by Zhu et al. (2025), findings in many studies were synthesized to determine that the personality variables of openness to experience and extraversion are the strongest predictors of innovation behavior, whereas

conscientiousness exhibits context-dependent results based on different occupations and cultures. Another meta-analysis conducted by Zell and Lesick (2021) also underlined the fact that personality-performance relationships are context-dependent, emphasizing the importance of investigating these connections in the specific context. Finally, it is also noteworthy to mention that Obschonka et al. (2023) showed how the psychological openness of societies helps to diffuse and absorb knowledge spillovers that are necessary for innovation.

Although there is increasing interest in the topic, there are some important gaps that still exist in the personality and innovation literature. First of all, most of the studies have been conducted in Western or Middle Eastern countries, leaving the generalizability of the results to the South Asian collectivist cultures unexplored. Pakistan is an interesting and under researched culture due to the particularities of the country's values related to collectivism, filial obligations, and respect for hierarchy. Secondly, the nature of the association between openness to experience and innovativeness is debatable. Finally, the role of gender in the personality-based innovation is understudied in educational environments. The current study tries to fill these gaps through exploring the connection between Big Five personality traits and individual innovativeness of Pakistani university students. The goals of the study include the examination of the correlation patterns of personality and individual innovativeness, as well as the prediction of the influence of personality on the innovative behavior of individuals.

Hypotheses

1. Big Five personality traits will be significantly correlated with individual innovativeness.
2. There will be significant gender differences in individual innovativeness.
3. Big Five personality traits will significantly predict individual innovativeness in a multiple regression model, independent of their bivariate correlations.

II. METHOD

Participants

A quantitative correlational research design was adopted for the present study. This design was selected because it permits the examination of relationships between variables as they naturally occur without experimental manipulation, making it particularly suitable for studying personality characteristics and behavioral tendencies in real-world educational settings. The study sample comprised 200 university students recruited through non-probability purposive sampling from several universities in Lahore, Pakistan. The sample included 101 males and 99 females, with ages ranging from 18 to 27 years ($M = 21.33$, $SD = 1.51$). The majority of participants (90.5%) were enrolled in bachelor's degree programs, while 9.5% were pursuing master's level education. Most participants (94%) were unmarried, and the majority came from nuclear family systems (69%). Participants were drawn from diverse academic disciplines to ensure representativeness. Inclusion criteria required participants to be currently enrolled university students between 18 and 27 years of age, as this age range corresponds to the developmental period when personality traits are relatively stable yet still responsive to environmental influences. Exclusion criteria eliminated participants with documented psychiatric conditions or physical disabilities that might affect their ability to complete the questionnaire independently.

Measures

Three instruments were employed for data collection. **[1] Demographic Information Sheet.** A self-constructed questionnaire gathered data on participants' gender, age, educational level, number of siblings, birth order, marital status, family system, educational institution, and field of study. **[2] Big Five Personality Inventory.** The Big Five Personality Inventory (BFI-10) was used to assess the five personality dimensions. The inventory consists of selected items measuring each of the five traits. Responses were recorded on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability coefficients in the present study were as follows: extraversion ($\alpha = .86$), agreeableness ($\alpha = .78$), conscientiousness ($\alpha = .99$), neuroticism ($\alpha = .90$), and openness to experience ($\alpha = .62$). These values are comparable to those reported in large-scale meta-analytic reviews of BFI psychometric properties (Husain et al., 2025). The inventory was administered in English, which was appropriate given the university student sample. **[3] Individual Innovativeness Scale.** The Individual Innovativeness Scale (IIS), originally developed by Hurt, Joseph, and Cook (1977), was used to assess individuals' general orientation toward innovation and the adoption of new ideas. The scale consists of 20 items, including 12

positively worded and 8 negatively worded (reverse-scored) items, rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater individual innovativeness. Based on the original scoring guidelines, scores above 80 classify respondents as Innovators, 69–80 as Early Adopters, 57–68 as the Early Majority, 46–56 as the Late Majority, and below 46 as Laggards (Hurt et al., 1977). In the present study, the scale demonstrated good internal consistency (Cronbach's $\alpha = .87$).

Procedure

This study relied on an online survey, mainly because the COVID-19 situation in 2021 made it difficult to meet participants in person, so Google Forms ended up being the practical choice. Before any of that could happen though, the research had to go through the Institute of Applied Psychology at the University of the Punjab, Lahore, where it received ethical approval. Participants weren't just handed the questionnaire straight away either. Each one first read through an information sheet that explained what the study was about and made it clear that joining was completely up to them, and that nothing they shared would be traceable back to them personally. Only once someone had given consent electronically would the actual survey open up for them to fill out. SPSS version 23.0 was used for all analyses. To begin with, descriptive statistics and Cronbach's alpha reliability values were calculated for every variable in the study. Pearson correlations came next, looking at how personality traits, individual innovativeness, and the various demographic factors related to one another. Gender differences were tested using an independent samples t-test. The last step was a simple linear regression to find out how much each personality trait, on its own, predicted innovativeness. Throughout, a p-value below .05 was treated as the threshold for statistical significance.

III. RESULTS

Table 1: Descriptive and Cronbach Alpha of Scales (N=200)

Variables	<i>M</i>	<i>SD</i>	Range	α
Individual Innovativeness	76.02	10.79	20-96	.870
Extraversion	7.73	2.09	2-10	.861
Agreeableness	7.36	1.98	2-10	.776
Conscientiousness	7.13	2.44	2-10	.994
Neuroticism	6.80	2.56	2-10	.895
Openness to Experience	7.05	2.14	2-10	.617

Note. *M* = Mean; *SD* = Standard Deviation; α = Cronbach alpha

Table 1 presents the descriptive statistics and reliability coefficients for all study variables. All scales demonstrated acceptable to excellent internal consistency, with Cronbach's alpha values exceeding .60. Individual innovativeness obtained a mean score of 76.02 (*SD* = 10.79), placing the sample as a whole in the early adopter category. Among personality traits, extraversion had the highest mean (*M* = 7.73, *SD* = 2.09), followed by agreeableness (*M* = 7.36, *SD* = 1.98), conscientiousness (*M* = 7.13, *SD* = 2.44), openness to experience (*M* = 7.05, *SD* = 2.14), and neuroticism (*M* = 6.80, *SD* = 2.56). These results suggest that the sample generally scored moderate to high on socially desirable personality dimensions.

Table II: Correlation Analysis

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Innovativeness	-	.09	.09	.10	-.17*	-.02	-.00	-.07	-.07	-.10	.02	.04	-.06	-.05	.08
2. Extraversion	-	-	-.01	-.16	-.25**	-.37	-.11	-.04	-.08	-.11	.00	-.19	.09	-.14*	.04
3. Agreeableness	-	-	-	-.02	-.07	.05	-.06	.10	.07	.06	.02	-.02	-.04	-.15*	.41
4. Conscientiousness	-	-	-	-	-.28**	.07	-.06	.22**	.16*	-.02	-.01	.11	.03	-.09	.16*
5. Neuroticism	-	-	-	-	-	-.04	-.27**	-.04	.06	.11	-.06	-.03	-.13	.02	-.16*
6. Openness	-	-	-	-	-	-	.03	.02	-.06	.03	-.02	-.07	-.01	.14*	.01
7. Gender	-	-	-	-	-	-	-	.17*	.05	-.05	-.32	.05	-.25**	-.15*	.04
8. Age	-	-	-	-	-	-	-	-	.10	-.08	.16*	.28**	.01	-.02	.20**
9. No. Of siblings	-	-	-	-	-	-	-	-	-	-.02	-.06	.04	.09	.04	-.04
10. Birth order	-	-	-	-	-	-	-	-	-	-	.05	.13	-.09	.06	-.09
11. Institute	-	-	-	-	-	-	-	-	-	-	-	.03	.08	.08	.01
12. Year of study	-	-	-	-	-	-	-	-	-	-	-	-	-.07	-.03	.20**
13. Family system	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.01
14. Marital status	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-.05
15. Interest in Arts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Pearson product-moment correlations were computed to assess the relationships between personality traits and individual innovativeness. Extraversion ($r = .10$), agreeableness ($r = .09$), and conscientiousness ($r = .10$) were positively correlated with individual innovativeness, though these zero-order correlations did not reach conventional levels of statistical significance ($p > .05$). Neuroticism demonstrated a significant negative correlation with individual innovativeness ($r = -.18$, $p < .05$), indicating that students with higher emotional instability reported lower innovation levels. Openness to experience showed a negligible negative correlation ($r = -.02$) with individual innovativeness at the bivariate level. Among the personality traits themselves, neuroticism was significantly negatively correlated with extraversion ($r = -.26$, $p < .01$) and conscientiousness ($r = -.29$, $p < .01$). Gender showed significant negative correlations with neuroticism ($r = -.28$, $p < .01$) and openness to experience ($r = -.14$, $p < .05$), indicating that male participants reported higher levels of these traits.

Table III: Multiple Linear Regression Analysis of personality traits as Predictors of Innovativeness in University Students (N=200)

Variables	B	SE	β	95 % CI		P
				LL	UL	
Extraversion	1.56	.353	.304	.869	2.26	<.000
Agreeableness	1.29	.349	.239	.609	1.98	<.000
Conscientiousness	0.36	.318	.081	.270	.986	.262
Neuroticism	0.02	.269	.006	-.506	.554	.929
Openness to Experience	1.21	.327	.242	-.573	1.86	<.000

Note. B = Unstandardized Beta, SE= standard Error, β =Beta, CI = Confidence Interval, LL = lower limit, UL = upper limit

A multiple linear regression analysis was conducted to examine the extent to which the Big Five personality traits predicted individual innovativeness among university students. The results indicated that extraversion ($\beta = .304$, $p < .001$), agreeableness ($\beta = .239$, $p < .001$), and openness to experience ($\beta = .242$, $p < .001$) were significant positive predictors of individual innovativeness. In contrast, conscientiousness ($\beta = .081$, $p = .262$) and neuroticism ($\beta = .006$, $p = .929$) were not significant predictors. Notably, while extraversion, agreeableness, and openness to experience showed weak or non-significant zero-order bivariate correlations, they emerged as robust, highly significant positive predictors in the multiple regression model. This statistical pattern reflects a classical suppression and partialling effect, whereby controlling for shared variance and collinearity among the Big Five personality dimensions isolates and unmask their unique, direct predictive contributions to individual innovativeness.

Table III: Independent Sample T Test Shows Gender Difference for Personality Traits & Individual Innovativeness

variables	Males		Females		t(198)	p	Cohen's d
	M	SD	M	SD			
Individual Innovativeness	71.90	80.29	11.32	8.41	5.29	.29	0.84

An independent samples t-test was conducted to examine gender differences in personality traits and individual innovativeness. The results revealed a significant difference in individual innovativeness, with males ($M = 78.13$, $SD = 11.87$) scoring significantly higher than females ($M = 73.85$, $SD = 9.32$), $t(198) = 2.96$, $p < .05$. Significant gender differences were also found for neuroticism, with females ($M = 7.32$, $SD = 2.62$) scoring higher than males ($M = 6.29$, $SD = 2.37$), $t(198) = -3.06$, $p < .01$. No significant gender differences emerged for extraversion, agreeableness, conscientiousness, or openness to experience (p values $> .05$).

IV. DISCUSSION

The aim behind this study was to figure out how the Big Five personality traits connect to individual innovativeness in Pakistani university students, and honestly, the results only partly lined up with what was expected going in. Still, that partial fit tells us something useful about how personality and innovation play out in a collectivist setting like Pakistan's. At the bivariate level, extraversion, agreeableness, and conscientiousness all came out positively correlated with innovativeness, though none of them crossed the line into statistical significance. Even so, the direction makes intuitive sense. Extraverted people are out there more, talking to more people, running into more new ideas just by virtue of being social, and they're probably more comfortable putting those ideas out there too. Agreeable people bring something different to the table, since their willingness to cooperate tends to support innovation just as much as raw creativity does. This tracks pretty well with what Sowmya et al. (2023) and Abdullah and Gull (2024) found in their own samples. The neuroticism finding deserves a bit more attention. It came out negatively related to innovativeness, which is exactly what theory would predict, but seeing it confirmed here still matters. The logic is that emotional instability eats away at the confidence and risk tolerance that innovating tends to require. Students who score high on neuroticism often carry more insecurity around with them, and that makes exploring unfamiliar territory feel a lot riskier than it needs to. Rahman et al. (2023) landed on a similar result, so this isn't coming out of nowhere.

Things looked a bit different once regression came into play. Extraversion, agreeableness, and openness to experience all turned into significant positive predictors once they were entered into the model alongside everything else. The extraversion result says something worth pausing on, that innovation really isn't some solitary, purely internal thing. It runs through communication, through convincing other people that an idea is worth trying, through actually getting it implemented in a social space. Agreeableness fits into that same picture. Being someone people want to cooperate with seems to open doors for innovation, and that might carry extra weight in a culture like Pakistan's where group harmony tends to matter a great deal. But the standout here is openness to experience. On its own, at the bivariate level, it barely moved the needle, practically flat. And yet, once the regression model accounted for everything else, it turned into a real, significant predictor. That's worth sitting with for a second. In a society where people often have to look outwardly conventional even when they're privately curious or intellectually restless, maybe it takes controlling for the overlap between traits before openness's actual pull on innovativeness becomes visible. Strip away the shared variance, and what's left is a much clearer picture of what openness is actually doing.

Gender came into it too. Male students reported noticeably higher innovativeness than female students did, and while it's tough to say exactly why, sociocultural dynamics are almost certainly part of it, especially around how much space young men get to take risks or think outside the lines compared to young women in a collectivist context. Cultural norms in Pakistan tend to hand men more room for independence and risk-taking, while women are more often nudged toward modesty and sticking to what's expected. Add to that the fact that women in this sample also scored higher on neuroticism, and given what was already said about neuroticism working against innovativeness, it's easy to see how that combination could widen the gender gap found here. Filenko et al. (2026)

reported something along the same lines, which backs this reading up a bit further. As for conscientiousness and neuroticism failing to hold up as predictors on their own in the regression, even though the direction matched expectations, that might just come down to how uniform this sample was. Other research has suggested conscientiousness tends to matter more inside organizations, where getting things done usually follows fairly structured paths (Awwad & Al-Aseer, 2021). University life doesn't always work that way. Innovation there often leans more on creativity than on process, so it's not surprising conscientiousness didn't carry as much weight in this particular context.

Limitations and Future Directions

This study has several limitations that should be kept in mind. The cross-sectional design, to start with, cannot establish causation between personality and innovativeness; a longitudinal approach would be needed for that. There is also the issue of self-report bias, since all measures relied on participants' own responses rather than behavioral indicators of innovation. Because the survey was conducted online during the pandemic, there was no way to supervise or verify how respondents were completing the questionnaire. The instruments were also administered in English, which may have limited comprehension among participants with lower educational attainment. It is also worth noting that the data were collected in 2021; although personality traits tend to remain fairly stable over time, students' engagement with innovation, especially anything tied to technology, could well have shifted since then, given how quickly digital tools and platforms have changed for university students in the years since. Finally, the sample size of 200 is relatively modest. Future research would benefit from longitudinal designs, larger and more geographically diverse samples across Pakistan, and closer attention to variables that might mediate this relationship, such as self-efficacy, creative self-concept, or motivational orientation. Replicating this study with a more recent sample would also help confirm whether these patterns hold up over time. A cross-cultural comparison between collectivistic and individualistic societies could shed further light on how cultural values shape the relationship between personality and innovation.

V. CONCLUSION

The current study focused on the connection between Big Five personality factors and individual innovativeness among 200 university students from Pakistan. The results reveal that extraversion, agreeableness, and openness to experience are significant positive predictors of individual innovativeness in multivariate analysis. For universities aiming at fostering innovativeness in students, it would be wise to include personality testing in student development and career counseling programs, since extraversion and agreeableness were found to be important predictors of innovativeness. It is possible that collaborative learning situations, where social interaction, working in groups, and sharing ideas would be encouraged, would result in increased innovativeness in students.

Acknowledgements

The authors acknowledge the valuable clinical guidance and supervision provided by the multidisciplinary team at University of the Punjab, Lahore, Pakistan.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

The author received no funding from any organizations.

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