



The big-five personality traits as predictors of self-esteem in college students from Sudan

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Received: 31 July 2025; Accepted: 03 February 2026; Published: 30 June 2026

Abstract: Research on the relationship between self-esteem and the Big-Five personality traits has focused on Western populations. However, it is crucial to explore this relationship in non-Western contexts to better understand cultural variations in personality and self-perception. This study examined the associations between the Big-Five personality traits and self-esteem in a sample of 583 Sudanese university students (299 men, 284 women). The Big-Five traits were measured using the Arabic Big-Five Personality Inventory (ABFPI), and self-esteem was assessed with the Rosenberg Self-Esteem Scale. Both instruments have demonstrated good psychometric properties in previous studies. Results indicated that all five Big-Five traits were significant predictors of men's self-esteem, while only extraversion and conscientiousness predicted women's self-esteem. Gender differences were also observed, with women exhibiting higher self-esteem and higher neuroticism scores than men. These findings suggest that cultural and social factors, such as gender roles and societal expectations in Sudan, may influence self-esteem and personality traits differently from Western contexts. This research contributes to the existing literature by highlighting the need for culturally specific investigations into personality and self-esteem, offering insights into the unique experiences of Sudanese individuals. The implications of these findings emphasize the importance of considering cultural context in psychological research, particularly in non-Western societies, and could inform interventions aimed at improving mental health and well-being in Sudan.

Keywords: self-esteem; big-five personality traits; extraversion; neuroticism; agreeableness; openness; conscientiousness; Sudan

Introduction

The relationship between self-esteem and personality traits has been a central focus in psychological research for more than a century, both theoretically and empirically. Self-esteem is generally defined as an individual's overall positive evaluation of the self (Rosenberg, 1989), or the tendency to regard oneself favorably or unfavorably (Leary & Baumeister, 2000; Zeigler-Hill, 2013). It has been consistently linked to a wide range of important psychological outcomes, including academic achievement, subjective well-being, and mental health (Padhy et al., 2011), as well as happiness, adjustment, persistence (Zeigler-Hill et al., 2015), life satisfaction (Joshalloo & Afshari, 2011), depression (Abdel-Khalek, 2016), and the perception of positive personality traits (Zeigler-Hill & Myers, 2012).

Despite extensive research, most studies exploring the relationship between personality traits and self-esteem have been conducted in Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich et al., 2010a). Consequently, populations from non-Western regions, particularly within Africa and the Arab world, remain severely underrepresented (Abdel-Khalek, 2016). Investigating this relationship in non-Western contexts is essential for broadening the cultural validity of psychological theories. Cross-cultural frameworks suggest that personality–self-esteem dynamics vary with cultural norms and social structures (Markus & Kitayama, 2010).

In collectivistic societies such as Sudan, self-worth may be shaped more by communal belonging, resilience, and social harmony than by individual achievement. Moreover, Sudan's ongoing political and economic challenges, along with its socio-cultural complexity, may uniquely influence the formation of self-esteem and the expression of personality traits (Bleidorn et al., 2016).

Big five traits and the self

Among the personality frameworks, the Big-Five model—comprising Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness—stands as the most widely accepted and psychometrically robust. Originating from the pioneering lexical studies of Allport and Odbert (1936) and the factor-analytic work of Cattell (1943), the model was later refined by Norman (1963), Goldberg (1990), and Costa and McCrae (1992), who developed the NEO Personality Inventory (NEO-PI-R) to assess these five domains. Collectively, these traits have demonstrated substantial predictive power for numerous psychological outcomes, including self-esteem. For instance, Robins et al. (2001) found that the Big-Five traits accounted for 34% of the variance in self-esteem, with Neuroticism (negatively), Extraversion, and Conscientiousness being the strongest predictors. Similarly, Amirazodi and Amirazodi (2011) reported that all five traits significantly influenced self-esteem



Table 1. Summary of previous studies on the correlations between self-esteem and personality traits

	SE and BF correlations				
	N	E	A	O	C
Abdel-Khalek (2018)	−0.56	0.37	0.15	0.02	0.78
Costa et al. (1991)	−0.69	0.49	0.12	0.16	0.51
Keller (1999)	−0.67	0.46	0.07	0.12	0.28
Kwan et al. (1997)	−0.69	0.47	0.13	0.06	0.32
Otero-López et al. (2024)	−0.30	0.22	0.21	0.14	0.28
Paleczna et al. (2023)	−0.73	0.51	0.37	−0.18	0.25
Pullman and Allik (2000) [†]	−0.64	0.39	0.01	0.09	0.38
Robins et al. (2001)	−0.50	0.38	0.13	0.17	0.24
Waltz and Chou (2003)	−0.67	0.41	0.33	−0.04	0.57
Yang et al. (2023)	−0.46	0.40	0.24	0.38	0.37

Note. [†]The mean of the correlations in three countries: Estonia, U.S.A., and Hong Kong. The significant level of the correlations depends on the sample size in the original study.

among Iranian university students, while Hutz et al. (2014) observed that—except for Openness—self-esteem correlated significantly with all Big-Five traits in samples from Brazil and the United States (see Table 1).

Gendered differences. Of additional interest is the gender dimension of self-esteem in Sudan. Contrary to many findings from Western contexts—where men typically report higher self-esteem—evidence from Sudan and similar African contexts suggests that women may exhibit higher self-esteem levels. This has been attributed to the resilience developed by women in overcoming sociocultural and economic barriers (Mayungbo, 2016; Herbst, 2020). Sudanese men, by contrast, may experience lower self-esteem due to economic hardship and traditional provider expectations. Such patterns highlight the necessity of interpreting self-esteem within its cultural, economic, and gendered contexts.

Goals of the study. The present study examined the relationships between the Big-Five personality traits—Conscientiousness, Agreeableness, Neuroticism, Extraversion, and Openness to Experience—and self-esteem among university Sudanese students by gender.

The present study addresses the following hypotheses:

H1: There are gender differences in self-esteem and the Big Five Personality traits.

H2: The Big Five personality traits predict self-esteem for both male and female students differently.

Method

Participants

A convenience sample of 583 undergraduate students (299 men, 284 women) from the University of Khartoum participated voluntarily in this study. Participants were full-time students aged between 18 and 30 years ($M = 22.7$, $SD = 3.19$), enrolled in various colleges and departments across the university, representing a diversity of socioeconomic and ethnic backgrounds. This broad representation reflects the heterogeneity of the university's student body.

Inclusion criteria required participants to be currently enrolled undergraduate students capable of providing informed consent. Students not enrolled during the data collection period or unable to provide consent were excluded. The sample size was determined based on effect sizes reported in prior studies conducted in non-Western contexts and was considered adequate to achieve sufficient statistical power for detecting medium-to-large effects.

Measures

Self-esteem

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1989), a widely used 10-item instrument designed to measure global self-esteem. Participants rated each statement on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with higher scores indicating higher levels of self-esteem.

The Arabic version of the RSES developed and validated by Abdel-Khalek (2007) was used in the present study. This version demonstrated satisfactory reliability and validity in Arabic-speaking populations. In the current sample, internal consistency reliability was strong (Cronbach's $\alpha = 0.87$).

In line with previous research highlighting psychometric issues associated with mixed-worded scales (Chen et al., 2024), the five negatively worded items from the original English version were replaced with affirmatively worded equivalents in the Arabic adaptation. This modification aimed to minimize response bias and improve internal consistency. Mixed-worded scales often attenuate inter-item correlations, lower reliability, and complicate latent factor structures due to irrelevant variance and cognitive response patterns.

Although the use of all positively worded items may limit the ability to capture aspects of low self-esteem (i.e., self-deprecation), the Arabic version has proven to be a culturally congruent and psychometrically sound measure of self-regard in Arab contexts (Abdel-Khalek, 2007).

Big-five personality traits

Personality traits were measured using the Arabic Big-Five Personality Inventory (ABFPI) (Abdel-Khalek, 2020). The ABFPI consists of 25 short statements—five items for each of the five personality traits: Extraversion, Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness. Participants responded on a 4-point Likert scale ranging from 1 (No) to 4 (Always), indicating how accurately each statement described them in general.

The ABFPI was specifically developed for Arabic-speaking populations and has demonstrated strong psychometric properties. In the current sample, internal consistency coefficients (Cronbach's α) were as follows: Extraversion (0.82), Neuroticism (0.79), Openness (0.80), Agreeableness (0.75), and Conscientiousness (0.81), reflecting good reliability across all subscales.

Procedure

Study approval was granted by the University of Khartoum, Faculty of Arts Research Board. Participants provided informed consent and were assured confidentiality. Participants consented to the study, they were informed about the purpose of the study and assured of the anonymity and confidentiality of their responses. Participation was entirely voluntary, and students were permitted to decline or withdraw at any point without penalty. Data were collected during regular class time by trained research assistants.

Data analysis

Data analyses were conducted using IBM SPSS Statistics software. Prior to hypothesis testing, data were screened to ensure they met the assumptions for parametric analyses. Normality was assessed using the Shapiro–Wilk test, potential outliers were examined using boxplots, and multicollinearity was evaluated using Variance Inflation Factors (VIF). A Principal Components factor analysis (with a varimax rotation) of the scale scores identified two factors for both men and women that were similar and accounting for 60% and 58% of the total variance, respectively (see Table 2). The first factor in both men and women could be labeled positive personality traits. The Big-Five personality traits of conscientiousness, openness, and agreeableness were the scales with the highest loadings. The second factor could be labeled self-esteem vs. neuroticism.

All variables met the criteria for normality, and no extreme outliers or multicollinearity issues were found.

Independent-samples *t*-tests and stepwise multiple regression analyses were conducted to determine which of the Big-Five traits best predicted self-esteem, separately for male and female participants.

Results

Table 3 present the descriptive statistics by gender. Females had higher mean scores for self-esteem and neuroticism and a lower mean score on extraversion.

Gender differences. Males and females did not differ in agreeableness, openness, and conscientiousness.

Table 4 presents correlations between self-esteem and the Big-Five personality scores for men and women

separately. Self-esteem was significantly associated with extraversion, agreeableness, openness, conscientiousness (positively), and neuroticism (negatively) in men. However, self-esteem was positively associated with extraversion and conscientiousness only in women.

Predicting self-esteem in personality traits by gender. A stepwise regression analysis was applied to predict self-esteem (see Table 5). The predictors of self-esteem among men were conscientiousness, extraversion, agreeableness and low neuroticism. For women, the predictors of self-esteem were extraversion and conscientiousness. The R^2 were 0.189 and 0.079.

Discussion

Gender differences in personality and self-esteem

Results revealed significant correlations between the Big Five traits and self-esteem for both genders, although the predictors differed. Women's self-esteem was predicted by **extraversion** and **conscientiousness**, while men's self-esteem was influenced by all five personality traits except openness. This suggests that gender roles and social expectations in Sudan play a crucial role in shaping self-perception.

In Sudan's collectivistic cultural context, women often juggle multiple social and familial responsibilities. Traits such as conscientiousness—associated with organization, dependability, and goal orientation—and extraversion—linked to social engagement and community participation—may enhance women's sense of competence and belonging, reinforcing higher self-esteem (Deci & Ryan, 2000; Eagly & Wood, 2012). Conversely, men's self-esteem appears to depend on a broader constellation of traits, including emotional stability, openness, and agreeableness, reflecting societal expectations that men fulfill multiple roles as providers, leaders, and decision-makers (Eagly, 1987; Bleidorn et al., 2016).

These findings support **social role theory**, suggesting that gendered self-esteem differences arise from culturally embedded role expectations. In contexts where women's contributions increasingly extend beyond domestic roles—to education, employment, and community leadership—traits fostering interpersonal effectiveness and self-regulation become central to self-esteem (Wood & Eagly, 2015).

Cultural and socioeconomic influences

The results also highlight the importance of **cultural and socioeconomic conditions** in shaping self-esteem. In contrast to individualistic societies where autonomy and personal achievement are prioritized, Sudan's collectivist orientation emphasizes interdependence, social cohesion, and contribution to family and community (Markus & Kitayama, 2010) explain why women derive self-esteem from socially oriented traits such as extraversion and conscientiousness, which facilitate cooperation, trust, and community engagement.

Moreover, Sudan's ongoing political and economic instability—including conflict, inflation, and unemployment—likely impacts gendered self-esteem differently. Men's roles as economic providers may heighten vulnerability to low self-esteem when financial

Table 2. Loadings of the total scale scores after orthogonal (Varimax) solution onto the components for men (n = 299) and women (n = 284) from Sudan

Scale	Men		Women	
	I	II	I	II
Self-esteem	0.350	0.601	0.184	0.554
Extraversion	0.409	0.584	0.523	0.562
Neuroticism	0.282	-0.794	0.232	-0.803
Agreeableness	0.783	0.157	0.775	0.013
Openness	0.733	-0.096	0.804	-0.036
Conscientiousness	0.792	0.290	0.756	0.210
Eigenvalue	2.147	1.450	2.181	1.312
% of variance	35.785	24.165	36.342	21.871
Total variance	59.950		58.213	

Table 3. Mean (M), standard deviation (SD), t value, and d for effect size of gender differences for men (n = 299) and women (n = 284) from Sudan

Scale	Men		Women		t	p	d
	M	SD	M	SD			
Self-esteem	35.61	10.03	37.95	9.26	2.93	0.003	0.24*
Extraversion	13.65	3.08	13.07	2.98	2.30	0.02	0.19
Neuroticism	8.29	3.21	10.15	3.25	6.96	0.0001	0.58**
Agreeableness	14.36	3.49	14.31	3.34	0.19	—	—
Openness	14.03	3.52	13.98	3.23	0.18	—	—
Conscientiousness	13.88	3.59	13.92	3.22	0.14	—	—

Note. *Small effect size; **Medium effect size

Table 4. Bivariate Pearson correlations between the scales for Sudanese men (n = 299; the upper matrix) and women (n = 284; the lower matrix)

Scales	SE	E	N	A	O	C
Self-esteem	—	0.301**	-0.167**	0.306**	0.141*	0.362**
Extraversion	0.247**	—	-0.174**	0.351**	0.173**	0.387**
Neuroticism	-0.072	-0.202**	—	0.063	0.063	-0.057
Agreeableness	0.088	0.398**	0.096	—	0.359**	0.564**
Openness	0.094	0.333**	0.107	0.412**	—	0.471**
Conscientiousness	0.204**	0.317**	-0.064	0.452**	0.531**	—

Note. * $p < 0.05$, ** $p < 0.01$.

stability is threatened (Elamin & Omair, 2010). In contrast, women's expanding access to education and social initiatives provides alternative sources of self-worth, consistent with findings from other African and Arab contexts where women's empowerment is linked to enhanced psychological well-being (Assaad et al., 2023).

Theoretical and practical implications

This study underscores the need to **contextualize psychological theories** developed in Western populations when applied to non-Western societies. It demonstrates that the predictive role of personality traits in self-esteem is shaped by gendered social expectations and cultural norms. The findings align with **self-determination theory** (Deci & Ryan, 2000), suggesting that self-esteem

flourishes when individuals experience competence, relatedness, and autonomy—each expressed differently across cultural settings.

From a practical standpoint, interventions to promote self-esteem in Sudan should consider gender and cultural contexts. For women, initiatives that enhance self-worth, while for men, programs addressing economic insecurity and mental health could mitigate the effects of social stressors on self-esteem.

Limitations and future directions

Although this study contributes novel insights, several limitations warrant acknowledgment. The sample was restricted to one university, limiting generalizability. Future research should incorporate participants from

Table 5. Stepwise regression for predicting self-esteem for men ($n = 299$) and women ($n = 284$) from Sudan

Predictors	B	SE	Beta	t	p	R ²
Men						
Conscientiousness	0.615	0.184	0.220	3.347	0.001	0.131
Extraversion	0.463	0.192	0.142	2.417	0.016	0.030
Neuroticism	-0.432	0.169	-0.138	2.562	0.011	0.014
Agreeableness	0.404	0.188	0.141	2.154	0.032	0.013
Constant	18.525	3.301	—	5.612	0.0001	—
F-ratio = 17.086 ($p < 0.0001$)						
R ² = 0.189						
Women						
Extraversion	0.629	0.188	0.202	3.349	0.001	0.061
Conscientiousness	0.403	0.174	0.140	2.321	0.021	0.018
Constant	24.122	2.896	—	8.330	0.0001	—
F-ratio = 11.969 ($p < 0.0001$)						
R ² = 0.079						

diverse regions and socioeconomic backgrounds. Longitudinal designs could elucidate how political and social changes influence personality–self-esteem dynamics over time. Future studies might also examine additional personality constructs, such as optimism or resilience, and their interaction with mental health outcomes (Orth & Robins, 2024). Exploring psychopathological variables such as depression and anxiety would further clarify the mechanisms linking personality and self-esteem in Sudanese populations.

Conclusion

This study provides a **critical, culturally contextualized contribution** to the psychology of self-esteem and personality by investigating an under-represented, non-Western (non-WEIRD) sample of Sudanese university students. This study provides valuable insights into the relationship between the Big Five personality traits and self-esteem within a Sudanese university sample, contributing to a growing body of research emphasizing the role of sociocultural context in shaping psychological constructs. Unlike findings from Western populations, where men typically report higher self-esteem, Sudanese women in this study exhibited higher self-esteem. This pattern underscores the influence of cultural, social, and economic factors unique to non-WEIRD (Western, Educated, Industrialized, Rich, and Democratic) societies (Henrich et al., 2010b; Twenge & Campbell, 2023).

Key findings and theoretical implications

The central finding is the clear demonstration that the **relationship between personality and self-esteem is profoundly shaped by gendered social and cultural context.**

- **Cultural Reversal of Gender Differences:** Contrary to typical findings in Western, individualistic societies, **Sudanese women exhibited significantly higher mean self-esteem** than men. This pattern is interpreted as reflecting the influence of unique

cultural and socioeconomic dynamics, where women's resilience may foster a stronger sense of competence.

- **Gender-Specific Personality Predictors:** The predictive model for self-esteem differed sharply by gender.
- **Women's self-esteem** was narrowly predicted only by **Extraversion** and **Conscientiousness**. These traits likely enhance women's self-worth by facilitating social engagement and competence in navigating multiple familial and community responsibilities inherent in Sudan's collectivistic culture.
- **Men's self-esteem** was predicted by a broader set of traits, including **Conscientiousness, Extraversion, Agreeableness, and lack of Neuroticism**. This suggests men's self-esteem is more comprehensively dependent on their entire personality profile, reflecting societal pressure to fulfill diverse traditional roles (e.g., providers, leaders).

This research contributes to the existing literature by highlighting the need for culturally specific investigations into personality and self-esteem. The findings underscore the importance of considering cultural context in psychological research, particularly in non-Western societies, and could inform interventions aimed at improving mental health and well-being in Sudan.

Future research should incorporate participants from diverse regions and socioeconomic backgrounds to enhance generalizability. Longitudinal designs could also be used to examine how political and social changes influence the personality-self-esteem dynamic over time. Lastly, investigating additional personality constructs and psychopathological variables such as depression and anxiety could further clarify these mechanisms.

Acknowledgement: We thank the university students for their co-operation and the research assistants for their effort.

Funding Statement: The authors would like to express their sincere gratitude to the Deanship of Scientific

Research at the University of Tabuk for funding this work through the Incentive Research Award for researchers.

Author Contributions: The authors confirm contribution to the paper as follows: study conception and design: Ahmed M. Abdel-Khalek; data collection & project supervision: Salaheldin Farah Attallah Bakhiet; analysis and interpretation of results: Ahmed M. Abdel-Khalek, Habab A. Osman, Intisar Abunagma Mohamed Saad; draft manuscript preparation: David Lester. All authors reviewed and approved the final version of the manuscript.

Availability of Data and Materials: Data will be made available on request.

Ethics Approval: Ethical approval for the study was obtained from the University of Khartoum, Faculty of Arts Research Board, ensuring that all procedures complied with established ethical standards for research involving human participants. Informed consent was obtained from participants who were provided with detailed information about the purpose, procedures, potential risks, and benefits of the study.

Conflicts of Interest: The authors declare no conflicts of interest.

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