Iranian Evolutionary Educational Psychology Journal
IEEPJ
University of Hormozgan
Online ISSN: 2588 - 4395
Homepage: https://ieepj.hormozgan.ac.ir

Prediction of Social Exchange Styles Based on Personality Traits with the Mediating Role of Locus of Control among Female Students of Universities in Tehran

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Article Info

Article type:
Research Article

Article history:
Received 07 Feb. 2025
Received in revised form 7 Apr. 2025
Accepted 11 May. 2025
Published online 01 Sep. 2025

Keywords:
Personality Traits,
Locus of Control,
Social Exchange Style,
Students,
Structural Equation Modeling

ABSTRACT

Objective: This study aimed to predict social exchange styles based on personality traits with the mediating role of locus of control.

Methods: The present study was a descriptive–correlational and fundamental research. The statistical population consisted of female students of universities in Tehran during the 2023–2024 academic year. A sample of 384 participants was selected using the convenience sampling method. Data were collected using the Social Exchange Style Questionnaire (SESQ), the Five Factor Personality Inventory (NEO FFI), and the Locus of Control Scale. Data analysis was conducted using Structural Equation Modeling (PLS3) on 300 participants.

Results: The results showed that dominant individuals had the strongest effects on fairness (β = 0.624) and excessive investment (β = 0.407). Internal locus of control had significant effects on positive exchange styles such as tracking (β = 0.611) and agreeableness (β = 0.487). Chance was associated with negative styles, particularly individualism (β = 0.562) and extraversion (β = 0.540). Examination of indirect paths indicated that locus of control plays an important mediating role between personality traits and exchange styles.

Conclusions: An internal locus of control strengthens more positive and constructive exchange styles and plays a positive mediating role, whereas a chance-based locus of control is more associated with negative styles such as individualism and reduced fairness. These findings are consistent with previous studies and highlight the importance of considering personality traits and locus of control in improving students' social interactions and academic success.

Cite this article: Yousefzadeh Khanaghah, M., Safarinia, M., Ghorban Jahromi, R. & Pirkhaefi, A. (2025). Prediction of social exchange styles based on personality traits with the mediating role of locus of control among female students of universities in Tehran. *Iranian Evolutionary Educational Psychology Journal*, 7 (3), 1-13.
DOI: https//doi.org/ 10.22034/7.3.1

Publisher: University of Hormozgan.
DOI: https// doi.org/ 10.22034/7.3.1

Introduction

In today's fast-paced world, where students face unprecedented challenges such as mental health crises, heavy academic pressures, and rapid social changes, examining how they interact with their environment and with one another has gained unprecedented importance (Filipiak & Lubianka, 2021; Sepah-Mansour et al., 2020). The unprecedented spread of online communication and the growing public and scientific concerns surrounding it have made social interactions an especially relevant topic (Yeh & Lin, 2015). Locus of control is a relatively stable personality characteristic that develops during the process of socialization and plays a key role in how individuals perceive their responsibility for life events—from believing in internal control over outcomes to attributing them to external factors such as chance or fate (Rotter, 1996).

Personality traits are enduring characteristics that define how individuals think, feel, and behave (Wunderheiden et al., 2021). Therefore, these traits can form a research framework for understanding behavioral differences (Filipiak & Lubianka, 2021). The Five-Factor Model of personality refers to extraversion, neuroticism, openness to experience, conscientiousness, and agreeableness, which are used to explain individual differences (Steel, 2025). Research has shown that locus of control is associated with these traits; for example, conscientiousness in achievement-related situations for both genders is strongly related to an internal locus of control (Filipiak & Lubianka, 2021). Neuroticism has been found to have a negative relationship with both internal and external locus of control (Wunderheiden et al., 2021). Moreover, extraversion and locus of control are powerful predictors of social self-efficacy among university students (Wang et al., 2024). Meanwhile, conscientiousness, negative affectivity, openness, and locus of control predict academic self-efficacy (Sharma & Sharma, 2025). In this regard, studies indicate that students with an external locus of control score higher in openness, conscientiousness, extraversion, and agreeableness (Yeh & Lin, 2015).

Locus of control, derived from Julian Rotter's social learning theory, reflects the degree to which individuals believe they have control over life events (Rotter, 1996). Individuals with an internal locus of control are more likely to assume responsibility for life events and attribute both successes and failures to internal factors (Sharma & Sharma, 2025). In contrast, those with an external locus of control attribute outcomes to environmental factors, chance, or the influence of others (Yeh & Lin, 2015). An internal locus of control is associated with a range of positive outcomes, including

higher academic achievement, increased self-efficacy, and lower levels of procrastination (Wang et al., 2024). This construct also plays a vital role in motivating students to engage in learning and self-development (Steel, 2025).

Social exchange styles, grounded in social exchange theory, contribute to understanding interpersonal relationships among students (Ahmad et al., 2023; Tadris Tabrizi et al., 2022). This theory provides frameworks for identifying and addressing problems across many dimensions of students' communication (Ahmad et al., 2023). With the emergence of communication platforms, online social interactions have gained particular importance in the digital era (Yeh & Lin, 2015). Interestingly, students with an external locus of control tend to engage more frequently in online social interactions (Yeh & Lin, 2015). Furthermore, a higher external locus of control has been associated with excessive use of artificial intelligence and improved online social interaction skills among Chinese students (Li et al., 2025).

Personality traits have a complex and multidimensional relationship with locus of control and social exchange styles (Safarinia & Dehghadaei, 2020). Locus of control functions as a cognitive personality characteristic that facilitates the cognitive structures of the Theory of Planned Behavior (Wunderheiden et al., 2021). It also acts as a mediator in various processes, such as the effect of organizational justice on organizational cynicism in schools (Kowalski et al., 2025). Recent research has clarified several of these relationships among student populations (Wang et al., 2024). In academic settings, locus of control and academic self-efficacy uniquely contribute to predicting academic performance (Sharma & Sharma, 2025). During online social interactions, students with an external locus of control are more likely to participate actively (Yeh & Lin, 2015). Moreover, an internal locus of control, along with a high tolerance for uncertainty, is associated with students' sense of competence and aspirations (Steel, 2025). This internal factor has also been linked to more advanced decision-making skills and stronger critical thinking among students (Kowalski et al., 2025). Internal locus of control has also consistently been associated with lower levels of procrastination (Wang et al., 2015). Studies have further shown that personality traits and locus of control are related to coping styles and life satisfaction (Heydari et al., 2022). In the field of health, findings also indicate that health locus of control plays a mediating role in the relationship between personality traits and adherence to treatment (Fahimi et al., 2021).

Despite the importance of this topic, relatively few studies have addressed it. Therefore, the present study aims to predict social exchange styles based on personality traits with the mediating role of locus of control.

Material and Methods

The present study was descriptive-correlational in terms of data collection method and basic in terms of purpose. The statistical population consisted of all female students enrolled in universities in Tehran during the 2024 academic year. The sampling method used in this study was convenience sampling. A total of 384 eligible participants were selected as the study sample through convenience and voluntary sampling.

The inclusion criteria were: being a female student, having psychological well-being based on a self-report form, willingness to participate in the study, and completion of the informed consent form. The exclusion criteria included incomplete questionnaires and withdrawal from cooperation with the researchers.

After preparing the online questionnaire link, and with emphasis on confidentiality and the principle of privacy protection, female students were invited to participate through the cooperation of faculty members and students from universities in Tehran, including public, Islamic Azad, and Payame Noor universities, via Telegram and WhatsApp groups, in order to respond to the questionnaires. Ultimately, based on structural equation modeling requirements, the data from 300 participants were analyzed using PLS3 software.

Instruments

Social Exchange Style Questionnaire (SESQ): The Social Exchange Style Questionnaire (SESQ) is a 54-item instrument developed by Liebman, Zuroff, Fournier, Kelly, and Martin (2011). It assesses five subscales, including fairness, self-interest, individualism, and excessive investment, scored on a five-point Likert scale. The reliability of the questionnaire, assessed using Cronbach's alpha, was reported as 0.83 for the total scale, indicating satisfactory reliability (Liebman et al., 2011). In addition, Safarinia (2017) examined its content validity using expert judgment, which supported the questionnaire's content validity. The results of factor analysis using the principal components method with Varimax rotation also confirmed the presence of five factors

with eigenvalues greater than 1.5. In the present study, the reliability of this questionnaire was found to be 0.973, and its validity was 0.519.

McCrae and Costa Personality Traits Questionnaire: This questionnaire was developed by Costa and McCrae (1992) to assess the Five-Factor Model of personality, including neuroticism, extraversion, openness, agreeableness, and conscientiousness. In the present study, the 60-item form of the questionnaire was used, with each factor assessed by 12 items. Overall, respondents could obtain a score ranging from 0 to 48 on each scale. The alpha coefficients reported by Costa and McCrae ranged from 0.74 to 0.89, with a mean of 0.81. In Iran, Haghshenas (2018), using a sample of 502 individuals from the population of Shiraz, obtained similar results. The Cronbach's alpha coefficients were reported as 0.83 for conscientiousness ©, 0.71 for agreeableness (A), 0.57 for openness (O), 0.71 for extraversion (E), and 0.81 for neuroticism (N). The test–retest reliability over a 6-month interval was reported as 0.53 for neuroticism (N), 0.60 for agreeableness (A), 0.76 for openness (O), and 0.74 for extraversion (E). In the present study, the reliability of this questionnaire was 0.972, and its validity was 0.580.

Levenson's Internal, Powerful Others, and Chance Scale (IPC): The Levenson IPC Scale was developed in 1973 by Levenson to determine the type of locus of control among adults. This questionnaire consists of 24 items and measures three dimensions—internality, powerful others, and chance—using a 6-point Likert scale ranging from strongly disagree to strongly agree.

Levenson reported Kuder–Richardson reliability coefficients ranging from 0.51 to 0.77 for the three scales. Split-half reliability using the Spearman–Brown formula was reported as 0.62, 0.66, and 0.64 for the internality, powerful others, and chance scales, respectively. Test–retest reliability over a one-week interval ranged from 0.60 to 0.79 (Levenson & Miller, 1976).

For the Persian version, the reliability coefficients for the internality, powerful others, and chance scales were reported as 0.52, 0.71, and 0.68, respectively (Ghorbanalipour et al., 2007). Ghorbanalipour et al. (2007) also reported reliability coefficients of 0.75 for internal locus of control, 0.76 for external locus of control based on powerful others, and 0.61 for external locus of control based on chance. Concurrent validity and validity of the internality, powerful others, and chance scales were established through comparison with Rotter's Internal–External Scale, as well as with the Marlowe–Crowne Social Desirability Scale, the California Personality Inventory, and the 16 Personality Factor Questionnaire (16PF) (Ghorbanalipour et al., 2007).

Results

Of the 384 participants included in the study, 269 were undergraduate students, 96 were master's students, and 19 were doctoral students. Regarding age distribution, 77 participants were under 20 years old, 173 were aged 21–25, 77 were aged 26–30, 38 were aged 31–35, and 19 were between 36 and 40 years old. Table 1 presents the descriptive statistics of the study variables.

Table 1. Descriptive statistics of study variables

Variable	N	Mean	Median	Mode	SD	Skewness	Kurtosis	Min	Max
Personality Traits									
Extraversion	384	3.70	3.75	4	0.54	-0.25	-0.71	1.67	4.67
Neuroticism	384	3.68	3.75	3.17	0.55	-0.21	-0.88	1.83	4.75
Openness	384	3.63	3.75	3.92	0.56	-0.46	-0.64	1.67	4.67
Conscientiousness	384	3.64	3.75	4	0.53	-0.38	-0.51	1.67	4.75
Agreeableness	384	3.68	3.83	4	0.53	-0.46	-0.52	1.67	4.75
Social Exchange Styles									
Pursuit	384	3.65	3.83	4	0.56	-0.49	-0.56	1.75	4.75
Fairness	384	3.67	3.75	4	0.52	-0.52	0.11	1.42	4.83
Over-investment	384	3.74	3.83	4	0.58	-0.48	-0.50	2	5
Self-interest	384	3.62	3.71	4.14	0.56	-0.27	-0.77	1.64	4.71
Individualism	384	3.70	3.80	4.10	0.56	-0.46	-0.59	1.60	4.90
Locus of Control									
Powerful Others	384	3.64	3.75	4	0.58	-0.58	-0.03	1.25	4.88
Chance	384	3.68	3.75	4	0.54	-0.36	-0.28	1.50	4.88
Internality	384	3.66	3.88	3.88	0.64	-0.47	-0.58	1.50	5

Because of the large sample size, the assumption of normality was assessed using skewness and kurtosis values. As shown in Table 1, all variables had skewness and kurtosis values within the acceptable range of –2 to +2, indicating that the variables were normally distributed. Therefore, parametric statistical tests were employed.

Validation of the Measurement Model

Since both the measurement model and the structural model were reflective, reliability and validity were examined first, followed by assessment of the factorial structure among the constructs. In PLS path modeling, hierarchical component models are commonly conceptualized using repeated indicators (Gino et al., 2001; Tenenhaus et al., 2005). In such models, a higher-order latent construct is formed through the indicators of its lower-order constructs. For example, the second-order latent construct Personality Traits consists of five first-order constructs (Extraversion, Conscientiousness, Openness, Neuroticism, and Agreeableness). Each first-order construct consists of its own observed indicators. In this hierarchical model, all the indicators are

used twice: (1) to form the first-order constructs and (2) to form the second-order construct. This approach can be extended to more complex hierarchical structures (Tenenhaus et al., 2005). One of the advantages of PLS is its ability to evaluate hierarchical models, which was utilized in the present study (Tabatabaei, Motaharinezad, & Tirgar, 2016).

Construct Reliability

As is standard in structural equation modeling, internal consistency reliability and convergent validity were examined first. The results are presented in Table 2.

Table 2. Reliability coefficients of the constructs

Construct	Cronbach's Alpha	Spearman Reliability	Composite Reliability
Internality	0.816	0.828	0.862
Powerful Others	0.781	0.792	0.840
Chance	0.733	0.736	0.810
Extraversion	0.822	0.829	0.860
Agreeableness	0.832	0.841	0.867
Openness	0.835	0.847	0.869
Neuroticism	0.829	0.839	0.864
Conscientiousness	0.831	0.838	0.866
Individualism	0.818	0.825	0.860
Over-investment	0.733	0.747	0.818
Fairness	0.831	0.836	0.866
Pursuit	0.844	0.852	0.875
Self-interest	0.862	0.871	0.886

Cronbach's alpha values above 0.70 indicate acceptable internal consistency. For constructs with fewer items, values above 0.60 are acceptable (Moss et al., 1998). As shown, all constructs met acceptable reliability standards.

Spearman internal consistency reliability also exceeded 0.70 for all constructs, confirming adequate reliability.

Composite reliability (CR), considered a more accurate reliability index than alpha (Wertz et al., 2010), exceeded 0.70 for all latent variables, indicating satisfactory internal consistency.

Model Predictive Quality (Q^2 Index)

The predictive relevance of the structural model was assessed using the Q^2 index, which evaluates the model's ability to predict observed values (Stone & Geisser, 1975). Positive Q^2 values indicate adequate predictive power (Tabatabaei & Jahangard, 2015), with thresholds of 0.02 (weak), 0.15 (moderate), and 0.35 (strong) (Henseler et al., 2009).

Table 3. Q^2 predictive relevance values for endogenous variables

Construct	SSO	SSE	Q^2 (=1 – SSE/SSO)
Powerful Others	3,072.000	3,072.000	—
Internality	3,072.000	3,072.000	—
Chance	3,072.000	3,072.000	—
Agreeableness	4,608.000	3,265.632	0.291
Extraversion	4,608.000	3,329.878	0.277
Neuroticism	4,608.000	3,345.450	0.274
Conscientiousness	4,608.000	3,284.483	0.287
Individualism	3,840.000	2,681.873	0.302
Self-interest	5,376.000	3,884.212	0.277
Pursuit	4,608.000	3,245.908	0.296
Openness	4,608.000	3,244.975	0.296
Fairness	4,608.000	3,397.002	0.263
Over-investment	2,304.000	1,609.301	0.302

As shown, all endogenous variables yielded Q^2 values above 0.21, indicating acceptable to strong predictive power for the structural model.

Research Hypothesis

Social exchange styles can be predicted based on personality traits with the mediating role of locus of control.

Table 4. Path coefficients and significance of personality traits with the mediating role of locus of control on social exchange styles

Path	Original Sample (O)	Sample Mean (M)	4.5%	95.5%
Powerful Others → Fairness	0.624	0.627	0.538	0.712
Powerful Others → Extraversion	0.289	0.286	0.207	0.358
Powerful Others → Agreeableness	0.220	0.218	0.145	0.295
Powerful Others → Neuroticism	0.212	0.211	0.137	0.286
Powerful Others → Over-investment	0.407	0.406	0.313	0.501
Powerful Others → Individualism	0.169	0.168	0.090	0.245
Powerful Others → Conscientiousness	0.314	0.314	0.234	0.384
Powerful Others → Self-interest	0.387	0.385	0.302	0.459
Powerful Others → Pursuit	0.238	0.241	0.160	0.328
Powerful Others → Openness	0.391	0.392	0.327	0.459
Internality → Fairness	0.206	0.203	0.114	0.294
Internality → Extraversion	0.163	0.165	0.099	0.238
Internality → Agreeableness	0.487	0.488	0.416	0.561
Internality → Neuroticism	0.305	0.308	0.235	0.386
Internality → Over-investment	0.393	0.399	0.301	0.499
Internality → Individualism	0.243	0.244	0.161	0.322
Internality → Conscientiousness	0.416	0.419	0.340	0.494
Internality → Self-interest	0.337	0.341	0.256	0.428
Internality → Pursuit	0.611	0.609	0.544	0.674
Internality → Openness	0.365	0.365	0.295	0.438
Chance → Fairness	0.117	0.117	0.022	0.204
Chance → Extraversion	0.540	0.542	0.472	0.608
Chance → Agreeableness	0.287	0.288	0.211	0.369

Chance → Neuroticism	0.459	0.458	0.381	0.538
Chance → Over-investment	0.115	0.112	0.027	0.200
Chance → Individualism	0.562	0.563	0.487	0.640
Chance → Conscientiousness	0.265	0.262	0.201	0.324
Chance → Self-interest	0.248	0.248	0.164	0.338
Chance → Pursuit	0.123	0.123	0.047	0.196
Chance → Openness	0.241	0.241	0.176	0.303

The examination of direct and indirect paths indicated that different dimensions of locus of control play a significant mediating role in the relationship between personality traits and social exchange styles. The Powerful Others dimension showed the strongest effect on fairness (β = 0.624) and over-investment (β = 0.407). It also demonstrated moderate effects on self-interest (β = 0.387), openness (β = 0.391), conscientiousness (β = 0.314), and extraversion (β = 0.289), while weaker effects were observed on pursuit (β = 0.238), agreeableness (β = 0.220), neuroticism (β = 0.212), and individualism (β = 0.169).

The internal locus of control (Internality) also had substantial positive effects on exchange styles. The strongest effects were observed for pursuit (β = 0.611) and agreeableness (β = 0.487). Moderate effects were found for over-investment (β = 0.393), conscientiousness (β = 0.416), openness (β = 0.365), and neuroticism (β = 0.305), while smaller effects were observed for extraversion (β = 0.163) and fairness (β = 0.206).

In contrast, the chance locus of control (external control based on chance) mainly influenced more individualistic and negative exchange styles. The strongest effects were observed for individualism (β = 0.562) and extraversion (β = 0.540). Moderate effects were found for neuroticism (β = 0.459) and agreeableness (β = 0.287), while weaker effects were observed for over-investment (β = 0.115), pursuit (β = 0.123), and fairness (β = 0.117).

Overall, these results indicate that Powerful Others and internal locus of control tend to strengthen positive and constructive exchange styles, thereby playing a positive mediating role. In contrast, chance-based locus of control is more associated with negative exchange patterns such as individualism and reduced fairness.

Discussion

The research hypothesis proposed that students' social exchange styles can be predicted based on personality traits, with locus of control playing a mediating role in this relationship. The findings

from the analysis of direct and indirect paths indicated that personality resources and locus of control significantly influence social exchange styles.

Specifically, the Powerful Others dimension showed the strongest effect on fairness (β = 0.624) and over-investment (β = 0.407). It also demonstrated moderate effects on self-interest, openness, conscientiousness, and extraversion, while its effects on pursuit, agreeableness, neuroticism, and individualism were relatively weaker.

Similarly, internal locus of control (Internality) exerted the strongest influence on positive exchange styles, particularly pursuit (β = 0.611) and agreeableness (β = 0.487). It also had moderate effects on over-investment, conscientiousness, openness, and neuroticism, while its effects on extraversion and fairness were comparatively smaller.

In contrast, chance-based external locus of control primarily influenced individualistic and negative interaction styles, particularly individualism and extraversion, and showed weaker effects on over-investment, pursuit, and fairness.

These findings are consistent with previous studies. For example, Filipiak and Lubianka (2021) and Sepah-Mansour et al. (2020) reported that personality traits and locus of control are significantly associated with students' social behaviors and interpersonal interactions. Furthermore, our findings regarding the positive effect of internal locus of control on constructive exchange styles align with the results of Wang et al. (2024) and Steele (2025), which showed that individuals with an internal locus of control tend to take responsibility for their actions and promote positive and cooperative interaction styles. On the other hand, the present results indicate that individuals with a chance-based external locus of control tend to adopt self-centered and individualistic interaction styles, which is consistent with the findings of Yeh and Lin (2015) and Fahimi et al. (2021).

Comparing the present findings with previous research highlights the significant mediating role of locus of control in the relationship between personality traits and social exchange styles. The results suggest that internal locus of control and personal agency (powerful individuals) contribute to strengthening positive and constructive behaviors, whereas external locus of control based on chance is more likely to lead to individualistic and less cooperative exchange styles. This pattern is consistent with Julian Rotter's social learning theory (1996) as well as social exchange theory,

both of which suggest that individuals' beliefs about control over events and their personal resources shape their interpersonal and social behaviors.

In conclusion, the findings of the present study are consistent with many previous studies and indicate that within the university context, strengthening students' internal locus of control and empowering them can improve their social exchange styles and academic functioning. These results highlight the importance of considering personality traits and locus of control in designing educational and psychological interventions. They also confirm that the theoretical frameworks proposed by Rotter (1996), Wang et al. (2024), and Yeh and Lin (2015) have practical applicability in predicting students' interactive behaviors.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

Funding

The authors did (not) receive support from any organization for the submitted work.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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