

Original Article

Modeling of belief in superstition based on personality traits mediated by locus of control in female students

Maryam Sharifi Broojerdi¹, Javanshir Asadi^{2*}, Ramazan Hassanzadeh³ and Arastoo Mirani⁴

1. PhD. Candidate, Department of Psychology, Islamic Azad University, Gorgan Branch, Gorgan, Iran.
2. Assistant Professor, Department of Psychology, Islamic Azad University, Gorgan Branch, Gorgan, Iran.
3. Professor, Department of Psychology, Islamic Azad University, Sari Branch, Sari, Iran.
4. Assistant Professor, Department of Theology and Religion, Islamic Azad University, Gorgan Branch, Gorgan, Iran.

Abstract

The aim of this study was to evaluate the model of belief in superstition based on ambiguity tolerance, mediated by the locus of control in female students. Correlation analysis was based on modeling according to structural equations. The population of this research included all 750 female undergraduate students aged 18 to 22 years old studying at the Faculty of Psychology, Islamic Azad University of Gorgan, Golestan, Iran, in 2019. The sampling was in a way that first the superstition questionnaire was administered to 725 students of the Islamic Azad University of Gorgan among whom 350 students who had a higher score in superstition and wanted to participate in the study were selected as the final sample. Therefore, 350 students were selected by the purposive sampling and asked to respond to the NEO-PI-R personality trait scale, Rutter Locus of Control Scale (RLCS), and Afshani's Beliefs in Superstitions Scale. The data analysis was based on structural regression equations conducted through in SPSS 24 and AMOS 23 programs. The results showed that the model was fitted, and 66% of the belief in superstition could be explained by personality traits and locus of control. More specifically, personality traits and locus of control were significantly associated with believing in superstitions at the level of $p = .01$. The present research can help accurately identify the factors associated with belief in superstition and improve students' cognitive-behavioral conditions.

Keywords

Personality traits, locus of control, beliefs in superstitions, female students.

Received: 2021/01/19

Accepted: 2021/02/21

Available Online: 2021/11/28

Introduction

Beliefs are among the main components of any society's culture, part of which is based on logic while the other part is based on baseless mindsets. Parts of these baseless beliefs, which have not been established on reason and logic, are called superstitions (Ramezani, 2018). In fact, superstitions include any sort of belief, irrational actions, and fear of an unknown and imaginary object, doubt, or habit that is based on fear or ignorance (Bukhari, Pardhan, Khan, Ahmed, Choudry & Khan, 2002). In general, fear, astonishment, and ignorance can be regarded as the main reasons behind superstitions. Studies have shown that since in critical situations humans usually cannot find the rational reasons for events through scientific and logical ways, they move towards superstitions to reduce their anxiety (Afshani, 2006). This issue can be explained by different approaches. According to Skinner's theory, an output

behavior is called superstitious whenever an accidental link is formed between hopelessness and the emergence of an enhancement. According to Bandura's social uniformity theory, the root of superstitions is in the pressures inflicted on an individual or individuals by the society (Marques & Benvenuti, 2017). Thus, the individual sees themselves compelled to obey these changes in order to be homogenized and accepted in the society. The theory of projection is also used to explain superstitions, according to which an individual keeps a distance from the main reasons of a problem using a defense strategy and attributes the problem to another phenomenon to reduce their anxiety (Arabbeigi, 2018).

Superstition is actually a defensive approach emerged in the form of cultural values, which in addition to reducing the feelings of insecurity and uncertainty makes the current situation tolerable (Rabiei, 2015). In fact, in such a situation that a person replaces rationality with emotions, they provide the grounds for the development

of superstition more than before (Dehghani & Ebrahimi, 2019). Today, fear from nature and unknown events has been replaced with the fear of various insecurities (such as economic and social), causing people to continue to believe in superstitions to reduce their anxiety (Ramezani, 2018). Despite scientific advancements, the availability of various scientific and cultural resources and increased number of educated people, superstitions can still be seen in societies. Students, as educated and future-making individuals in the society, are no exception to this. The research conducted in this field indicates that students tend to believe in superstitions (Dehghani & Ebrahimi, 2019). According to Freud and Jung's theory, superstitions are not ancient entities or only related to the less-educated classes of the society, but are an indispensable part of human life. Therefore, belonging to the modern era or being educated does not mean that a person does not believe in superstitions, which is also true for students (Moradi Rastegar, Jabbari Vala, Shamkhani, & Zahiri Barazandeh, 2018). In the past years, women's deprivations in the society (e.g., deprivation of education, lower presence in the society, socio-economic inequalities, etc.) have caused them more fear and ambiguities, leading women towards superstitions to alleviate their problems and find solutions (Abedian & Nafari, 2016). The degree of a person's tendency towards superstitions can be influenced by their personality traits.

Personality is a psychological variable influencing the human's behaviors at individual and social levels (Ofori, Tod & Lavallee, 2018) that can sometimes cause the person and others serious problems secondary to maladaptive traits (Khatib, Nazer, Nematollah Zadeh Mahani, & Sadr Mohammadi, 2016). Comprehensive typology includes five relatively stable factors: openness (O), conscientiousness (C), extraversion (E), agreeableness (A), and neuroticism (N) (Matz, Gladstone & Stillwell, 2016). McCrae and Costa (2004) concluded that there could be a relationship between intra-individual personality differences and the five major personality traits. Neuroticism refers to the experience of anxiety, compassion, hostility, and impulsivity (Tahir, Qureshi & Safi, 2018), while extraversion indicates an individual's tendency to be a positive, daring, and intimate person (Chen, 2019). Openness refers to an individual's desire for curiosity, artistry, and rationality, while agreeableness refers to one's propensity for kindness, generosity, empathy, and trust (Grant & Chamberlain, 2019). Finally, conscientiousness shows a person's desire for being ordered, reliable, self-disciplined, and logical (Khatib *et al.*, 2016). In fact, personality traits play a key role in agreeableness with stressful experiences and events and long-lasting stressors at the workplace, as well as in predicting satisfactory goals in future (Sood, Bakhshi & Gupta, 2012). On the other hand, adaptive personality traits, such as openness to experiences and extraversion, influence a person's tolerance of unsettled social issues

(Houlfort *et al.*, 2015). Locus of control can play the role of a mediator in the relationship between superstitious beliefs and individuals' performance (Charoensukmongkol, 2019).

The locus of control is another variable that can influence superstitious beliefs. The locus of control is a system of beliefs according to which a person evaluates their successes and failures based on their strengths and weaknesses (Hashemian *et al.*, 2015). There are two directions regarding the locus of control: some people find internal orientation, believing that skill, diligence, caution, and responsibility lead to positive outcomes (Tony, 2016). On the other hand, some find external orientations, believing that events are determined by chance, others' power, and unknown and uncontrollable factors (Jashni, Keramati, & Amiri, 2014); according to these individuals, behavior and outcome are independent of each other (Johnson, Batey, & Holdsworth, 2015). Therefore, because they believe that the consequence is not related to behavior, they conclude that outcomes are beyond their control (Roddenberry and Rick, 2014). There is a correlation between the locus of control, life's goals, spirituality, and psychological health (Gardamas, 2012), such that people with internal control orientation perform better in the face of problems and tensions because of their spirituality (Salehi & Shahdoostfard, 2015).

In this regard, Dehghani & Ebrahimi (2019) showed in a study that although students are among educated groups of the society, superstitious beliefs are seen in them. Heidariyehzade (2018) reported that cognitive factors such as intelligence and personality traits have an important association with superstitious beliefs. Also, Ramezani (2018) showed that superstitions are more common in women than in men. In another study on mentally-ill patients, Nasabeh and Javidi (2017) reported that superstitions were significantly linked with personality traits, social and individual insights, and the level of mental distress tolerance. Anyaegbunam, Omonijo & Ogunwa (2021) demonstrated that extraversion and introversion personality traits could affect an individual's tendency to superstitions. Ofori *et al.* (2018) also noted that the superstitious behaviors of students are a function of the quality of coping-based beliefs, cognitive control strategies, and adaptive personality traits. Sagone & De Caroli (2015) in their research concluded that superstitions are more common in girls than in boys.

Superstitions, due to having strong roots in people's lives and cultures, can hinder their achievements in many aspects of life. This leads people to use superstitions instead of finding a logical way to reduce anxiety and logically solve the problem when facing problems. This approach not only fails to solve the problem but also can direct people towards magic and sorcery, making tricksters' market brisk. In the

meantime, a progressive society needs thoughtful members, and those who rely on superstitions can be problematic to the development of the society. In practice, the findings of this study can help alleviate this problem and provide experts appropriate solutions. The aim of this study was to present a structural model for the role of personality traits mediated by the locus of

control in female students' belief in superstitions at Islamic Azad University of Gorgan. The conceptual model of this research has been developed accordingly. Figure 1 shows the basic conceptual model of Belief in Superstition Based on Personality Traits Mediated by Locus of Control in Female Students.

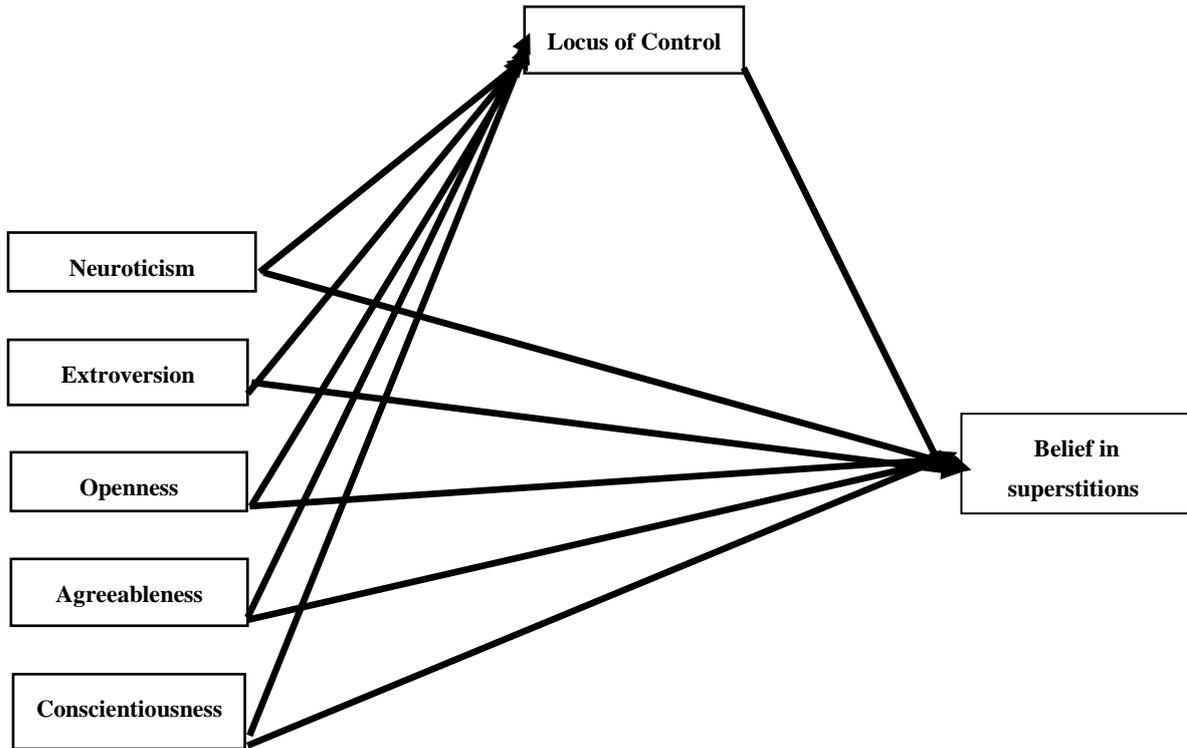


Figure 1. Conceptual Model of the Relationship Between Belief in Superstitions and Personality Traits Mediated by the Role of the Locus of Control

Method

Procedure

The present study was a basic research conducted with a cross-sectional design. Data analysis was conducted using descriptive statistics and structural equation modeling (SEM), the regression type.

Participants

The statistical population of this research included all 750 female undergraduate students aged 18 to 22 years old studying at the Faculty of Psychology, Islamic Azad University of Gorgan, Golestan, Iran, in 2019. The sample selection method was that first the superstition questionnaire was administered to 725 students of the Islamic Azad University of Gorgan and among 350 students who had a higher score in superstition and wanted to participate in the study as the final sample were chosen. It should be noted that the sample was selected in such a way that to be consistent with the

pattern of structural equations, the number of samples must be at least 15 times the observed variables (Hooman, 2014). In this study, to determine the sample size according to the number of observed variables and assigning a coefficient of 30 for each observed variable (10 variables observed in the model), 350 people was selected as the sample size by a purposeful method.

Instrument

The Revised NEO Personality Inventory (NEO-PI-R):

This scale was designed by McCrae and Costa (1985). As a tool screening the five main factors of neuroticism, extraversion, openness, agreeableness, and conscientiousness, this scale is considered as a comprehensive factor analysis model. The NEO-FFI is a 60-item questionnaire used to evaluate the five main personality traits when there is limited time for the test, or it is only sufficient to have general information about the personality. The tool is rated based on a 5-point

Likert scale (strongly disagree= 1, disagree= 2, don't care= 3, agree= 4, and strongly agree= 5). The construct and content validity of the instrument were confirmed by the developers, and its reliability was approved by the Cronbach's alpha coefficients of 0.86, 0.73, 0.56, 0.68, and 0.87 for the neuroticism, extraversion, openness, agreeableness, and conscientiousness traits, respectively. In Iran, Garossi Farshi (2001) and Atashafrooz (2007) confirmed the construct and content validity of this test, and using the internal consistency method, reported Cronbach's alpha coefficients of 0.74, 0.55, 0.27, 0.38, and 0.77 for the neuroticism, extraversion, openness, agreeableness, and conscientiousness traits, respectively.

Rutter's Locus of Control Scale (RLCS):

This scale was developed by Rotter in 1966 to measure people's expectations at the locus of control. This tool consists of 29 options, each of which has a pair of questions (a & b). The subject receives 1 score if he/she chooses the "b" item of options 3, 4, 5, 10, 11, 12, 13, 15, 22, 26, and 28 and the "a" item of options 2, 6, 7, 9, 16, 17, 18, 20, 21, 23, 25, and 29. The sum of the scores reflects the subject's locus of control, with a higher score indicating the subject's tendency towards an external source of control. The highest score on this scale is 23, and the lowest is zero. In the 23 options assigned for scoring, items "a" receive 1 score, and items "b" are scored zero. As each individual's total score reflects the type and degree of their locus of control, the subjects obtaining a score of 9 or higher are considered to have an external locus of control, while those with a lower score are assumed to possess an internal locus of control. The construct and content

validity of this scale were confirmed by Rutter, and its reliability using the retest method was reported 0.49-0.83. In Iran, Sabouri Moghaddam confirmed the construct validity of Rutter's scale in 1993 and reported its reliability coefficient as 0.81 using the split-half method.

Belief in Superstition Scale:

This scale was designed by Afshani in 2009 and comprises 16 two-item options (yes & no), scored as zero or one. A higher score shows more belief in superstitions. The construct and content validity of this scale were confirmed, and its reliability according to Cronbach's alpha coefficient was reported 0.86.

Procedure

After receiving the necessary permits, samples were chosen by the purposive sampling method. After choosing samples, they became aware about the research and how answer the questionnaires. Then they filled the forms. The exclusion criterion was partial completion of the questionnaires. The statistical method of the research was structural regression equations performed in SPSS 24 and Amos 23 software programs. For data analysis, structural regression equation modeling was utilized.

Results

At first, the assumptions of statistical tests were checked using the elongation and skewness tests, box plots, and Kolmogorov-Smirnov test, which confirmed the normality of the data. The measurement model of the three research variables was also investigated.

Table 1. The Mean, Standard Deviation and Correlation of Locus of Control and Personality Traits with Belief in Superstition

Variable	M	SD	1	2	3	4	5	6	7
Neuroticism	24.29	5.50	1	-	-	-	-	-	-
Extraversion	23.95	1.86	-0.29**	1	-	-	-	-	-
Openness	22.62	2.79	-0.31**	0.51**	1	-	-	-	-
Agreeableness	22.28	2.43	-0.25**	0.58**	0.29**	1	-	-	-
conscientiousness	27.96	3.63	-0.24**	0.56**	0.49**	0.51**	1	-	-
Locus of control	14.27	3.87	-0.33**	0.31**	0.29**	0.31**	0.33**	1	-
Believing in superstitions	6.24	1.96	0.33**	-0.35**	-0.31**	-0.29*	-0.32*	-0.29*	1

P<0/05 ** P<0/01

According to Table 1, there was a significant correlation between the locus of control, personality traits, and

belief in superstitions at the level of P = 0.01.

Table 2. Fit Indices from Data Analysis

Test	Comments	Acceptable values	Corrected obtained values
χ^2/df	Relative chi-square	<3	2.764
χ^2	The Chi-square goodness of fit	-	370.376
DF	Degree of freedom	-	134
RMSEA	Root-mean-square error	<0.1	0.031
GFI	Adjusted Fit Index	>0.9	0.994
NFI	Normed Fit Index	>0.9	0.990
CFI	Comparative Fit Index	>0.9	0.996

According to Table 2, the value of RMSEA was 0.031, which is less than 0.1, indicating an appropriate mean squared error of the model, so the model was plausible. Also, the Chi-square value with the degree of freedom

of 2.764 (i.e., between 1 and 3) and the values of GFI, CFI, and NFI approximately equal to or >0.9, indicated an appropriate model for measuring the research variables.

Table 3. The Direct Estimation of the Model with the Maximum Likelihood Estimation

Variables	B	β	R ²	t	P
Neuroticism on belief in superstitions	0.337	0.311	0.104	4.632	<0.001
Extraversion on belief in superstitions	-0.314	-0.287	0.09	3.524	<0.001
Openness on belief in superstitions	-0.305	-0.290	0.088	3.919	<0.001
Agreeableness on belief in superstitions	-0.328	-0.304	0.099	4.211	<0.001
Consciousness on belief in superstitions	-0.307	-0.297	0.091	3.984	<0.001
Locus of control on belief in superstitions	-0.263	-0.237	0.062	3.218	<0.001

As shown in Table 3, the paths of locus of control and personality traits had a significant and direct effect on

belief in superstitions.

Table 4. Indirect Estimation of the Model Using the Bootstrap Method

Variables	β	Lower limit	Upper limit	P
Neuroticism on belief in superstitions mediated by the locus of control	0.421	0.357	0.524	<0.001
Extraversion on belief in superstitions mediated by the locus of control	-0.354	-0.413	-0.227	<0.001
Openness on belief in superstitions mediated by the locus of control	-0.329	-0.384	-0.184	<0.001
Agreeableness on belief in superstitions mediated by the locus of control	-0.397	-0.480	-0.259	<0.001
Consciousness on belief in superstitions mediated by the locus of control	-0.331	-0.401	-0.273	<0.001

As indicated in Table 4, the indirect path of locus of control, mediated by personality traits, had significant effects on belief in superstitions as approved by the

standardized values (β) obtained according to the bootstrap estimation method.

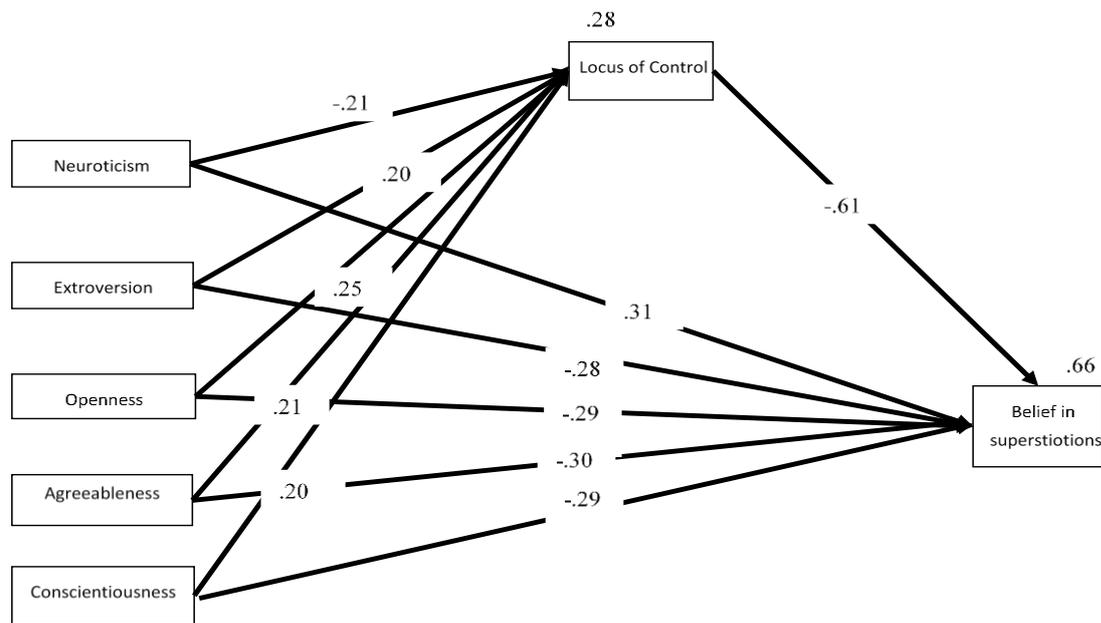


Figure 2. The final Model of the Paths Tested Along with Standardized Estimation Statistics

Discussion

The aim of this study was to investigate the effects of personality traits mediated by the locus of control on belief in superstitions among students. According to the research model, the extraversion trait was able to predict belief in superstitions by 66%, approving the research model. Assessment of the role of personality traits and the locus of control in predicting superstitious beliefs showed that the mean and standard deviation values were 24.92 and 5.50 for neuroticism, 23.95 and 1.86 for extraversion, 22.62 and 2.79 for openness, 22.28 and 2.43 for agreeableness, and 27.96 and 3.63 for conscientiousness, respectively. The mean and standard error for the locus of control variable were 14.27 and 3.87, respectively. According to the β standardized values obtained, the indirect path of personality traits to superstitious beliefs, mediated by the locus of control, was significant and approved based on the bootstrap estimation method (the effect size of 0.662 at $P = 0.01$). These results were consistent with the findings of Heydariyehzadeh (2018), Nassabeh & Javidi (2017), Abedian & Nafari (2016), Abdollahi (2014), Hatami et al. (2010), Charoensukmongkol (2019), Varghese (2019), Tahir et al. (2018), Ofouri et al. (2018), and Smaldino (2019).

There are beliefs in the human mind that are not compatible with any scientific logic, and believing in them is justifiable with no logical grounds. Nevertheless, these beliefs exist and sometimes can change the course of an individual's life. The extent of these beliefs in each person depends on their personality

traits and views (Heydariyehzadeh, 2018). Personality traits such as neuroticism in unstable families lead people towards baseless beliefs and superstitions, further inflicting harm to the family and exacerbating the situation (Abdullahi, 2014). In general, people possessing more negative personality traits such as neuroticism and less positive traits such as openness and extraversion are more likely to believe in superstitions. Also, low self-confidence, anxiety disorders, low self-esteem, negative self-image, and disliking oneself are the most prominent personality traits of the people believing in superstitions (Hossini et al., 2013). In general, people with neuroticism are relatively more anxious and more easily accept superstitions. On the other hand, individuals who have internal control over their thoughts and emotions are less likely to believe in superstitions and deal with issues in a more realistic way. The important point regarding the personality traits of the people believing in superstitions is that they always think that things happen outside the natural course of life and cannot be controlled (Abedian & Nafari, 2016). In such a situation, these people generally tend to cede to the event, further laying the ground for moving towards superstitions.

Sometimes, seemingly supernatural events occur in one's life, and because they are unaware of their reasons and see them out of control, they are interpreted within the context of superstitions (such as the hallucinations experienced when falling asleep or waking up, which have a neurological and physiological basis) (Ofori et al., 2018).

One of the elements of positive personality traits,

such as agreeableness and extraversion, is the locus of control. Overall, the locus of control is to believe that whether the events happening in one's life, good or bad, are the result of one's own efforts and actions or the result of others' actions or luck (Tahir et al., 2018). From this point of view, people are divided into two groups; those who have an internal locus of control and those with an external locus of control (Abdollahi, 2014). If the person believes that they are the sole responsible for anything that has happened in their lives, they possess control over their lives (Nassabeh & Javidi, 2017). A study by Mieres et al. (2016) revealed that the personality traits of people with neuroticism are governed by an external locus of control, and these people believe more in superstitions and luck and are more likely to accept such beliefs.

Another essential issue is the dimensions and personality traits of the people who turn to superstitions (Charoensukmongkol, 2019). Psychologically, the main source of locus of control in individuals with positive personality traits (e.g., responsibility, adaptive, mature, independent, and organized) is internal and roots in their own existence, whereas in individuals with negative personality traits (e.g., neuroticism, dependence, passivity, and submissiveness) (Ofori et al., 2018) and those devoid of self-actualization, there is an external locus of control that relies on individuals, groups, and institutions, leading them towards submission and obedience (Sagone & Di Caroli, 2014). In other words, people who are intrinsically passive, dependent, anxious, helpless, incapable, fearful, unintelligent, old-fashioned, and hopeless are more likely to turn to and act according to superstitions.

Conclusion

Belief in superstitions is one of the problems that effects people from different aspects. Based on our research, some factors like external locus of control and neuroticism are effective on superstitions. Regarding the effects of negative personality traits, such as neuroticism, on superstitions, it is suggested to utilize behavioral therapy techniques as a method for the trial and error of these beliefs. The thought reconstruction method is another approach that can be used to reduce superstitious beliefs, in which efforts are directed to inform the person about the lack of a link between external phenomena and superstitions, so they do not relate an event to a superstitious belief and avoid becoming distressed. Considering the effects of locus of control on believing in superstitions based on positive psychological perspectives, it is recommended to strengthen positive sources of control, and consequently reduce negative dimensions, using therapeutic methods, and promote educating positive thinking skills, cognitive control, and agreeableness. Also, it is

recommended for educational institutions to investigate personality traits based on social cognition and emphasize on perceptions and attitudes towards intellectual independence to upgrade cognitive levels.

We had some limitations in our study. For example, one of the limitations of this study was the lack of considering ethnicity and ethnical culture as a control variable, which could have yielded more accurate results. Also, the cross-sectional design of the research, as well as the nature of mental states and personality traits, is another limitation of the present study, which could have affected responses to the questionnaires. One of the major limitations of the present research was its reliance on the subjects' mental reports, so there was a room for bias in these reports. Finally, our study was limited to the students of Psychology studying at Islamic Azad University of Gorgan.

Disclosure Statement

No potential conflict of interest was reported by the authors.

ORCID

Javanshir Asadi: <https://orcid.org/0000-0002-4099-3559>

References

- Abedian, N., & Nafari, H. (2016). Effective factors in women tendency to superstitions. The international congress of society environment in the field of management, economics, enterprising, and cultural engineering. *International Congress on Community Empowerment in Management, Economics, Entrepreneurship and Cultural Engineering*. <https://civilica.com/doc/565987/>
- Afshani, A., & Ahmadi, A. (2009). The amount of modernity and belief in superstitions in Yazd. *Strategic research Institute*. 41(6), 59-100. doi: 10.22051/jwsp.2021.34719.2373
- Anyaeibunam, M. C., Omonijo, D. O., & Ogunwa, C. E. (2021). Exploring the Relationship Between Personality Traits and Superstitious Beliefs. *Journal of International Cooperation and Development*, 4(1), 60-60. doi: 10.36941/jicd-2021-0004
- Arabbeigi, A. (2018). *The psychology of superstition*. Tehran: Vania. <https://www.adinehbook.com/gp/product/6008496906>
- Atashafrooz, B. (2007). *Predicting academic achievement through attachment and five personality traits*. MSc thesis, faculty of Educational Science and psychology, Shahidbeheshti university, Tehran.

- Bukhari, S. S., Pardhan, A., Khan, A. S., Ahmed, A., & Khan, M. (2002). Superstitions regarding health problems in different ethnic groups in Karachi. *JPMA. The Journal of the Pakistan Medical Association*, 52(8), 383-387. <https://pubmed.ncbi.nlm.nih.gov/12481684/>
- Charoensukmongkol, P. (2019a). Moderating roles of external locus of control and knowledge expertise on the relationship between superstitious belief and stock trading performance. *Kasetsart Journal of Social Sciences*, 40(1), 47-54. <https://so04.tci-thaijo.org/index.php/kjss/article/view/235322>
- Charoensukmongkol, P. (2019b). The Moderating Effect of Locus of Control on the Relationship between Perceived Poor Business Performance and Superstitious Behaviors of Thai Entrepreneurs. *BU Academic Review*, 18(1), 1-17.
- Chen, M. (2019). A Mental Examination Using Personality to predict Happiness, Altruism and Health. In *SHS Web of Conferences* (Vol. 60, p. 01006). EDP Sciences.
- Costa, P. T., & McCrae, R. R. (1985). *The NEO personality inventory*. Odessa, FL: Psychological Assessment Resources. <https://psycnet.apa.org/doi/10.1037/1040-3590.4.1.5>
- Dehghani, H., & Ebrahimi, H. (2019). Studying the Feeling of Social and Psychological Security with a Tendency toward Superstition (Case Study: Isfahan University Students). *Strategic research on social problem in Iran*, (84) pp. 99-122. doi: 10.22108/srsp.2020.118235.1435
- Gardamas, N. (2012). Psycho-spiritual/religious and well-being perspective, *Asian Journal of Psychiatry*, 5 (4), 347-350.
- Grant, J. E., & Chamberlain, S. R. (2019). Obsessive compulsive personality traits: Understanding the chain of pathogenesis from health to disease. *Journal of psychiatric research*, 116, 69-73. doi: 10.1016/j.jpsychires.2019.06.003
- Hashemian, M., Fallahian, A., Akaberi, A., Asadi, Z., Khosrorad, R., & Solimani, A. (2015). Relationship of Health Locus of Control with Attitude toward Breast Cancer among Women with Family Positive History of Breast Cancer in Sabzevar city. *The Iranian journal of obstetrics, gynecology and infertility*, 2(18), 9-15. http://ijogi.mums.ac.ir/article_5842.html
- Hatami, H., Mohammad, N., Ebrahimi, M., & Khatamian, M. (2010). Relationship between locus of control and personality traits. *Thought and Behavior in Clinical Psychology*, (518), PP. 21-30. <https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=208244>
- Heidariyehzade, B. (2018). Investigating the role of superstitions and superstitious beliefs in relation to mental health. *The second international conference of innovation and research in moral and training, relation to religion and psychology*.
- Hooman, HA. (2014). *Structural Equation Modeling with LISREL Application*. <http://samt.ac.ir/en/book/4354/structural-equation-modeling-with-lisrel-application>
- Hossini, S., Keraskiyan, A., & Ferdosi pour, A. (2013). The contribution of five major factors of personality in the prediction of ambiguity tolerance. *Thought and Behavior in Clinical Psychology*, (830) pp. 17-26. https://jtbcp.riau.ac.ir/article_58.html?lang=en
- Houliort, N., Claude, F., Robert, J.V., Andréanne, L., Frédéric, G., & Richard K. (2015). The role Personality traits and marital satisfaction in psychological adjustment to retirement. *Journal of Vocational Behavior*, 88, 84-94. doi: 10.1093/oxfordhb/9780199794911.013.009
- Jahoda, G. (2014). *The psychology of superstition*. (F. Shoeibi). <https://www.amazon.com/Psychology-Superstition-Gustav-Jahoda/dp/0876681852>
- Jashni, H., Keramati, H., & Amir, I. H. (2014). Investigating the relationship between personality traits and the locus of control and self-esteem in student. The First Scientific Research Conference on Educational Sciences and Psychology of Social and Cultural harms in Iran.
- Johnson, S.J., Batey, M., & Holdsworth, L., (2015). Personality and health: The mediating role of Trait Emotional Intelligence and Work Locus of Control. *Personality and Individual Differences*, 47 (5), 470-475. doi: 10.1016/j.paid.2009.04.025
- Khatib, H., Nazer, M., Nematallahzade Mahani, K., & Sadr Mohammadi, R. (2016). Relationship between personality traits with job satisfaction and happiness among employees Valie-Asr university of Rafsanjan. *Organizational culture management*, 14(40) pp. 1161-1180. doi: 10.22059/jomc.2016.60495
- Marques, N. S., & Benvenuti, M. F. L. (2017). The study of superstition in behavioral sciences: discussing experimental arrangements and theoretical assumptions. *Trends in Psychology*, 25, 1397-1409. doi: 10.9788/TP2017.3-21
- Matz, S. C., Gladstone, J. J., & Stillwell, D. (2016). Money buys happiness when spending Macdonald, A. (2010). Revised scale for ambiguity tolerance: Reliability and validity. *Psychol Rep*. 26:791-98.
- McCrae, R. R., & Costa, P. T. (2004). A Contemplated Revision of the NEO Five-Factor Inventory. *Personality and Individual Differences*, 36, 587-596. doi: 10.1016/S0191-8869(03)00118-1
- Mieres, H. G., González, N. G., & González, A. F. (2016). LA mediación de la superstition surelacion con el locus de control. *RIDPSICLO*, 1(2), 9-16.
- Moradi Rastegar, HR., Jabari Vala, M., Shamkhani, A., & Zahir Barazandeh, A. (2017). Students' tendency toward superstitious beliefs (case study of Payame Noor University of Hamedan). *Quarterly Journal of Police Cultural Studies*. 2(44), 69-91 http://pava.jrl.police.ir/article_13390_80b3d3d0bb85d22cc42322f77bb36a7b.pdf

- Nassabeh, M., & Javidi, H. (2017). Study of superstitions effect and Superstitious intuition In chronic mental disease in Iranian society. The third national conference of new researches in the field of humanities and social in Iran. <https://civilica.com/doc/654880/>
- Ofori, P. K., Tod, D., & Lavallee, D. (2018). An exploratory investigation of superstitious behaviours, coping, control strategies, and personal control in Ghanaian and British student-athletes. *International Journal of Sport and Exercise Psychology*, 16(1), 3-19. doi: 10.1080/1612197X.2016.1142460
- Pals, H., & Kaplan, H.B., (2013). The roles of internal locus of control and neighborhood affluence in predicting the continuity of negative self-feelings from adolescence to young adulthood. *Journal of Adolescence*, 36 (5), 807-814. doi: 10.1016/j.adolescence.2013.06.006
- Rabiei, K. (2015). Socio-Economic Development and its Impact on Individuals/ Perception of Entity of Superstitions Case Study: Isfahan Province, Iran. *Journal of applied psychology*. 2(264), 129-148. <https://dorl.net/dor/20.1001.1.20085745.1394.26.4.7.7>
- Ramezani, K. (2019). A Comparative Study of Superstition Implications In the attitude towards the public and academic education of Kohgiluyeh and Boyerahmad province. *Sociological Cultural Studies*, 9(4), 25-39. <https://www.sid.ir/en/journal/ViewPaper.aspx?id=724052>
- Risen, J. L. (2016). Believing what we do not believe: Acquiescence to superstitious beliefs and other powerful intuitions. *Psychological Review*, 123(2), 182–207. doi: 10.1037/rev0000017
- Roddenberry, A., & Renk K. (2014). Locus of control and self-efficacy: potential mediators of stress, illness, and utilization of health services in college students. *Child Psychiatry Hum Dev*, 41 (4), 353-70. doi: 10.1007/s10578-010-0173-6
- Rotter, J. B. (1966). Rotter's Locus of Control Scale. *Psychological Monographs*, 80, 1-28. doi: 10.1037/H0092976
- Sabouri Moghadam, H. (1993). *The effect of control source and the possibility of controlling stress and performance and learning a person*. Master thesis in psychology, Iran medical university. <https://www.sid.ir/fa/journal/ViewPaper.aspx?id=52850>
- Salehi, F., & Shahdost fard, F. (2016). The relationship between spiritual intelligence with locus of control and psychological health in students. International conference on modern research result in sciences, engineering & technology. <https://civilica.com/doc/519561/>
- Smaldino, P.E. (2019). Individual differences and personality and cooperation in cultural evolution. *Behavioral Processes*, 12 (3): 263-271. doi: 10.1016/j.beproc.2017.11.015
- Sood, S., Bakhshi, A., & Gupta, R. (2012). Relationship between personality traits, spiritual intelligence and well-being in university students. *Journal of Education and Practice*, 3, 55-59.
- Stevens, S. M. (1994). Estimating neonatal mortality risk: an analysis of clinicians' judgments. *Pediatrics*, 93(6), 945-950. <https://pubmed.ncbi.nlm.nih.gov/8190582/>
- Tahir, T. B., Qureshi, S. F., & Safi, T. (2018). Superstitions as Behavioral Control in Pakistan. *Pakistan Journal of social Sciences (PJSS)*, 38(2), 25-41.
- Tony, T.S. (2016). Locus of control, attritional style and discipline problems in secondary schools. *Early child development and car*, 173 (5), 455-466. doi: 10.1080/0300443032000088203