




## Modeling General Health of Iranian Immigrants Based on Cognitive Flexibility and Perfectionism Mediated by Acculturation Stress

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### ABSTRACT

**Objective:** Immigration is a dual-factor phenomenon that creates psychological pressures by establishing a stressful environment and necessitating new adaptations. This study aimed to determine the fit of the proposed model of general health of Iranian immigrants based on cognitive flexibility and perfectionism, mediated by acculturation stress.

**Methods and Materials:** The study employed a correlational method. The population comprised all Iranian immigrants who had legally resided for more than a year in Western Europe, North America, or Oceania. A sample of 224 individuals was selected through convenience sampling. Data collection was conducted using Goldberg's General Health Questionnaire (1972), Dennis and Vander Wal's Cognitive Flexibility Inventory (2010), Hill et al.'s Perfectionism Questionnaire (2004), and Hovey and King's Acculturation Stress Scale (1996).

**Findings:** Results indicated that cognitive flexibility negatively impacts the general health of immigrants ( $\beta = -0.46, p = 0.001$ ). Perfectionism also negatively affects their general health ( $\beta = -0.42, p = 0.001$ ). Acculturation stress positively impacts the general health of immigrants ( $\beta = 0.76, p = 0.001$ ).

**Conclusion:** The assessment of the proposed model using path analysis demonstrated a good fit for the general health of Iranian immigrants based on cognitive flexibility and perfectionism, mediated by acculturation stress. Consequently, fostering positive cognitive flexibility and perfectionism can aid in reducing acculturation stress and maintaining mental health in immigrants.

**Keywords:** General health of Iranian immigrants, Cognitive flexibility, Perfectionism, Acculturation stress

### 1. Introduction

The inclination towards immigration and living in large cities and countries is a result of development and

wealth diversity in recipient regions, as noted by (Castells-Quintana, 2018; Liddle, 2017). Immigration poses a dual challenge by creating a stressful environment and necessitating new adaptations, leading to psychological

pressures. The World Health Organization defines general health as a state of complete physical, social, and mental well-being, and not merely the absence of disease or infirmity (Stevens et al., 2015). Immigration can be studied as a factor influencing stress. Immigrants experience various forms of psychological pressure, including harassment, physical and sexual violence, and life-threatening situations during and prior to the immigration process, potentially leading to severe and long-term mental health consequences (Sangalang et al., 2019).

Cognitive flexibility seems to be a factor associated with adaptation and maintaining mental health in the immigration process. Defined as a dynamic process responsible for an individual's positive adjustment to the environment, cognitive flexibility allows a person to adapt to changing environmental stimuli despite adverse or harmful experiences (Dennis & Vander Wal, 2010). It can be a crucial component of bicultural values, reflecting the ability of bicultural individuals to confront potential conflicts in two different cultural norms (Kim & Omizo, 2005). Furthermore, immigrants bring new customs and ideas that could serve as diverse experiences for the local population, potentially enhancing creativity through cognitive flexibility (Ritter et al., 2012). Studies have shown a relationship between cognitive flexibility and mental health (Aghajani & Samadifard, 2019; Sadri Damirchi et al., 2018). Cognitive flexibility is also a predictor of suicidal thoughts (Miranda et al., 2013) and depression severity (Dickstein et al., 2007).

Another factor influencing the decision to immigrate appears to be perfectionism with negative characteristics. Hill et al. (2004) described adaptive and maladaptive aspects of perfectionism; maladaptive perfectionist concerns consistently show positive relationships with characteristics, processes, and outcomes considered undesirable or maladaptive (e.g., neuroticism, avoidance coping, negative affect). In contrast, perfectionist strivings often show positive relationships with characteristics, processes, and outcomes considered desirable or adaptive (e.g., conscientiousness, active coping, positive affect) (Hill & Curran, 2016; Hill et al., 2010; Hill et al., 2004). In the study by Rafezi & Hakami (2020), negative and exhibitionist perfectionism were predictors of the decision to immigrate. Studies also indicated that dimensions of perfectionism can predict depression and anxiety (Rafezi & Hakami, 2020). Macedo et al. (2015) found that perfectionism predicts most psychological distresses (Macedo et al., 2015).

As studies have shown, individuals who immigrate to a new country may experience acculturation stress (Cano et

al., 2017; Ertl et al., 2019; Mayorga et al., 2018). Acculturation stress refers to the stress arising directly from the acculturation process and may lead to a specific set of feelings and behaviors including depression and anxiety, feelings of marginalization and alienation, increased psychosomatic symptoms, and identity confusion (Hovey & King, 1996). Efforts to maintain cultural identities, beliefs, and values may lead to Acculturation stress in immigrants (Castillo et al., 2015). Dillon et al. (2013) showed that acculturation stress peaks during the early years of immigration in the United States (Dillon et al., 2013). Studies also indicated that increased acculturation stress is associated with increased depression symptoms (Bae, 2020; Cano et al., 2015). Post-immigration stressors also impact the emotional and behavioral problems of children (Stevens et al., 2015).

Research literature reviews have indicated that various factors play a role in immigrants' health, but the majority of these factors are beyond the immigrants' control. For the practical application of this research, the investigator has focused on variables that are amendable to training and change. Identifying these factors plays a significant role in enhancing the general health of immigrants; by educating about these factors, it's possible to reduce immigrants' stress and improve their general health, thereby enhancing their quality of life. Therefore, considering the evidence mentioned, this study poses the question: Does acculturation stress play a mediating role in the relationship between cognitive flexibility and perfectionism with the general health of immigrants?

## 2. Methods and Materials

### 2.1. Study Design and Participants

The method of this study was correlational, employing path analysis to develop a model for predicting the general health of Iranian immigrants based on cognitive flexibility and perfectionism, mediated by acculturation stress. The study population included all Iranian immigrants who had legally resided for more than one year in countries of Western Europe, North America, or Oceania, were over 18 years old at the time of migration, and between 20 to 60 years old at the time of responding to the questionnaires. The sampling method was convenience sampling. Based on Kline's (2023) recommendation (Kline, 2023), the sample size was determined to be 224 participants ( $n = 224$ ). Data collection was conducted through online questionnaires created on the Porsline website. Since the researcher was in

close contact with many Iranian immigrants, links to the questionnaires were distributed in virtual groups such as Telegram and Instagram, where the researcher had access and Iranian immigrants were members. All questionnaires were anonymous, and participants were assured that their information would remain confidential and used solely for research purposes. Participants responded to Goldberg's General Health Questionnaire (1972), Dennis and Vander Wal's Cognitive Flexibility Inventory (2010), Hill et al.'s Perfectionism Questionnaire (2004), and Hovey and King's Acculturation Stress Scale (1996) online. Additionally, demographic information such as age, gender, education, country of residence, number of years of immigration, and marital status were collected. The researcher provided their ID or phone number at the end of the questionnaire form as a means of contact for participants in case of any ambiguities while completing the questionnaires.

## 2.2. Measures

### 2.2.1. General Health

The General Health Questionnaire was created by Goldberg (1972) for screening mild mental disorders in various situations. The original form of this questionnaire consists of 60 questions, with shortened forms of 12, 28, and 30 questions also available. The 28-item form of this questionnaire was developed by Goldberg and Hillier (1979). It includes four subscales: somatic symptoms, anxiety symptoms, social dysfunction, and depression, each consisting of seven questions. Questions are scored using a four-point Likert scale ranging from 0 (for option A) to 3 (for option D). Scores of each participant on each subscale are determined separately, and the total subscale scores indicate the overall general health score. Higher scores indicate lower general health. The cut-off score for each subscale is 10.5. The minimum score on this questionnaire is 0, and the maximum is 84, with scores ranging from 0 to 28 considered low, 28 to 42 medium, and over 42 high. The cut-off score for the entire questionnaire is 42 (Goldberg & Hillier, 1979). In a study by Goldberg and Williams (2000), the split-half reliability coefficient for the entire questionnaire was reported as 0.95 (Goldberg & Williams, 2000). In a study by Tabatabaei and Rasouli (2018), the Cronbach's alpha coefficient for the questionnaire was 0.96, with coefficients for different subscales ranging from 0.96 to 0.73 (Tabatabaei & Rasouli, 2018).

### 2.2.2. Cognitive Flexibility

The Cognitive Flexibility Inventory, created by Dennis and Vander Wal (2010), is a short 20-item self-report tool used to measure a type of cognitive flexibility necessary for individual success in challenging and replacing inefficient thoughts with more effective ones. This questionnaire is used to assess an individual's progress in clinical and non-clinical work and in creating flexible thinking in treatment. It attempts to measure three aspects of cognitive flexibility: 1) the desire to perceive difficult situations as controllable (control), 2) the ability to perceive multiple alternative explanations for life events and human behaviors (alternatives for human behaviors), and 3) the ability to generate multiple alternative solutions for difficult situations (alternatives). The control subscale includes sentences numbered 1, 2, 4, 7, 9, 11, 15, and 17. Questions are arranged on a seven-point Likert scale (from strongly disagree, score 1, to strongly agree, score 7). Sentences 2, 4, 7, 9, 11, and 17 are scored inversely. The questionnaire has a total score that can range from 20 to 140. Higher scores indicate greater cognitive flexibility. The score range is classified as low (20 to 40), medium (40 to 80), and high (over 80). The cut-off score for the entire questionnaire is 80. Dennis and Vander Wal (2010) demonstrated that this questionnaire has appropriate factorial structure, convergent validity, and concurrent validity. Its concurrent validity with Beck's Depression Inventory was -0.39, and its convergent validity with Martin and Rubin's Cognitive Flexibility Scale was 0.75. Dennis and Vander Wal (2010) also reported the reliability of the questionnaire using Cronbach's alpha for the total scale, control, and alternatives as 0.91, 0.84, and 0.91, respectively, and test-retest reliability as 0.81, 0.75, and 0.77 (Dennis & Vander Wal, 2010). In Iran, unlike the original scale with only two subscales, the Cognitive Flexibility Inventory consists of three subscales: control, alternatives, and alternatives for human behaviors. Dennis and Vander Wal (2010) demonstrated that the two subscales of alternatives for human behaviors and alternatives are meaningful, with control considered as the second subscale (Aghajani & Samadifard, 2019; Sadri Damirchi et al., 2018; Soltani et al., 2013).

### 2.2.3. Perfectionism

In this study, Hill et al.'s (2004) Perfectionism Questionnaire was used to assess perfectionism. This questionnaire consists of 59 statements and measures six subscales: negative self-view, organization and orderliness,

goal orientation, perception of parental pressure, striving for excellence, and high standards for others. The adaptive aspect of perfectionism is derived from combining the subscales of organization and orderliness, goal orientation, and striving for excellence, while the maladaptive aspect is derived from combining the subscales of negative self-view, perception of parental pressure, and high standards for others. The overall perfectionism score is obtained from the sum of scores on these six factors. Statements are rated on a five-point Likert scale (ranging from strongly disagree, score 1, to strongly agree, score 5). The score range is classified as low (59 to 118), medium (118 to 177), and high (over 177). The cut-off score for the entire questionnaire is 177. Hill et al. (2004) reported high internal consistency of the Perfectionism Questionnaire, with coefficients ranging from 0.83 to 0.91 for all subscales (Hill & Curran, 2016; Hill et al., 2010; Hill et al., 2004). This questionnaire was validated in Iran by Jamshidi et al. (2009). The calculation of Cronbach's alpha coefficient of 0.90 indicated acceptable reliability of the tool. Also, the initial expectations of a relationship between negative aspects of perfectionism and mental health were confirmed. The factor structure analysis of the scale indicated the presence of six factors, explaining 43.0% of the total variance (B. et al., 2009).

#### 2.2.4. Acculturation Stress

The Acculturation Stress Scale, developed by Hovey and King (1996), consists of 16 statements. The original 60-item version of this scale was created by Padilla et al. (1985) and was later reduced to 36 items by Mena et al. (1987) (as cited in Hovey & King, 1996). This questionnaire measures acculturation stress in four areas: social, attitudinal, familial, and environmental. After a preliminary study in Korean-American adolescents and Korean immigrant adolescents showed that the 26-item scale needed revision, it was reduced to 16 statements. This questionnaire indicates how an individual perceives acculturation stress. Statements are rated on a four-point Likert scale (ranging from strongly

agree, score 1, to strongly disagree, score 4). The overall acculturation stress score is obtained from the sum of scores on these four factors, with higher scores indicating lower acculturation stress. The score range is classified as low (16 to 32), medium (32 to 40), and high (over 40). The cut-off score for the entire questionnaire is 40. The original 16-item version of this questionnaire was first translated into Korean by a graduate student from Korea using a back-translation method. The translated version was then re-translated into English by another student and compared with the original SAFE. If there were differences in translation, modifications were made to SAFE until agreement between the evaluators and translators reached 0.80. SAFE was preliminarily implemented in a group of 12 Korean-American adolescents aged 12 to 18. Hovey and King (1996) reported that SAFE, based on 26 items, had an internal reliability of 0.89, and based on 16 items (Hovey & King, 1996), the Cronbach's alpha coefficient in Nho's (2000) study was 0.76 (Nho, 2000).

#### 2.3. Data analysis

For evaluating the proposed model of this research, path analysis was used, employing SPSS-26 and LISREL-8.

### 3. Findings and Results

Descriptive findings of the 224 participants showed the lowest percentage of age group was 21 to 30 years (with 31 individuals) and the highest was 31 to 40 years (with 67 individuals). The lowest percentage of education level was diploma and lower (with 13 individuals), and the highest was master's degree and above (with 91 individuals). The lowest percentage of years of residence was 30 years and more (with 5 individuals), and the highest was 1 to 10 years (with 132 individuals). The least common country of residence was Australia (with 2 individuals), and the most common was Canada (with 75 individuals). Most participants were women (with 190 individuals).

**Table 1**

*Descriptive Statistics of Research Variables*

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Cognitive Flexibility	48.14	5.39	0.927	0.523
General Health	77.32	3.28	-1.038	1.437
Perfectionism	104	3.50	-1.381	1.329
Acculturation Stress	61.24	5.88	-0.374	-0.527

As observed in Table 1, the skewness and kurtosis statistics of the research variables all fall within the range of -2 to +2, indicating a normal distribution of data.

**Table 2**

*Pearson Correlation Coefficient Results Among Research Variables*

Variables	1 - Cognitive Flexibility	2 - Perfectionism	3 - Acculturation Stress	4 - General Health
1 - Cognitive Flexibility	-	0.511**	-0.674**	-0.654**
2 - Perfectionism	0.511**	-	0.763**	-0.423**
3 - Acculturation Stress	-0.674**	0.763**	-	-0.469**
4 - General Health	-0.654**	-0.423**	-0.469**	-

The results of the Pearson correlation coefficient revealed that there is a significant negative relationship between perfectionism and general health ( $r = -0.423$ ;  $P < 0.01$ ). There is a significant negative relationship between cognitive flexibility and general health ( $r = -0.469$ ;  $P < 0.01$ ). There is a significant positive relationship between acculturation stress and general health ( $r = 0.763$ ;  $P < 0.01$ ). There is a significant negative relationship between cognitive flexibility and acculturation stress ( $r = -0.654$ ;  $P < 0.01$ ). There is a significant negative relationship between perfectionism and acculturation stress ( $r = -0.674$ ;  $P < 0.01$ ).

Before analyzing the data using the statistical method of path analysis, the assumptions of multivariate normality, linearity, multicollinearity, and independence of residuals were examined. The normality of the data was confirmed using skewness and kurtosis statistics. For examining multicollinearity, the tolerance statistic and the variance inflation factor (VIF) were used, and for all variables, the VIF was less than 10, and the tolerance statistic was more than 0.01, affirming this assumption. The independence of

residuals was examined using the Durbin-Watson test. The obtained value in this study was 2.16, which lies in the range of 1.5 to 2.5, indicating the assumption of independence of residuals is met. The assumption of linearity was examined by analyzing regression residuals and it was determined that there is no deviation from linearity among the variables. Therefore, considering the adherence to these assumptions, the fit of the proposed model was evaluated based on fit indices.

The results indicate that the value of the chi-square statistic is 334.17 with 151 degrees of freedom, which results in a chi-square to degrees of freedom ratio (2.21) less than 3, indicating an excellent fit of the model. The GFI is 0.911, indicating a desirable fit of the model. The AGFI is 0.867, greater than 0.85, thus the model has a desirable fit. The RMSEA value is 0.048, which is considered desirable as it is less than 0.1, indicating the model is confirmed. The NFI index is 0.916, the TLI index is 0.923, the CFI index is 0.921, and the RFI index is 0.935, all indicating a desirable fit and confirmation of the research model.

**Table 3**

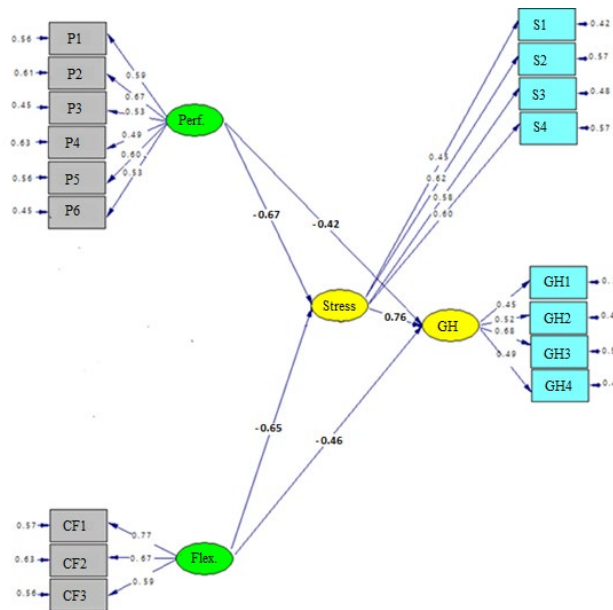
*Estimates Related to the Direct Effects of Independent Variables on the Dependent*

Path	Unstandardized Estimate	Standardized Estimate	Critical Ratio	p	Hypothesis
Perfectionism ---> General Health	-0.42	0.265	-4.35	0.0005	Confirmed
Cognitive Flexibility ---> General Health	-0.46	0.344	-5.44	0.0005	Confirmed
Acculturation Stress ---> General Health	0.76	0.310	8.74	0.0005	Confirmed



Figure 1

Final Model with Direct Effects



Based on Figure 1 and Table 3, cognitive flexibility ( $\beta = -0.46, P = 0.001$ ) has a negative effect on general health, perfectionism ( $\beta = -0.42, P = 0.001$ ) has a negative effect on

general health, and acculturation stress ( $\beta = 0.76, P = 0.001$ ) has a positive effect on general health.

Table 4

Estimation of Indirect Paths in the Model Using the Bootstrap Method

Exogenous Variable	Mediator Variable	Endogenous Variable	Estimated Value	Upper Bound	Lower Bound	p	CL
Perfectionism	Acculturation Stress	General Health	-0.653	0.245	0.132	0.006	0.95
Cognitive Flexibility	Acculturation Stress	General Health	-0.674	0.154	0.118	0.005	0.95

Based on Table 4, to examine the effect of cognitive flexibility on general health mediated by acculturation stress, the indirect effect coefficient was estimated to be -0.674, which is significant at the 0.95 confidence level; this is because the bootstrap test results for the indirect effect showed that the lower and upper bounds of this path coefficient do not include zero (95% CI: -0.118 ~ -0.154). Therefore, the role of the mediating variable of acculturation stress in the research hypothesis is confirmed.

To examine the effect of perfectionism on general health mediated by acculturation stress, the indirect effect coefficient was estimated to be -0.653, which is significant at the 0.95 confidence level; this is because the bootstrap test results for the indirect effect showed that the lower and upper bounds of this path coefficient do not include zero (95% CI: -0.132 ~ -0.245). Therefore, the role of the mediating

variable of acculturation stress in the research hypothesis is confirmed.

#### 4. Discussion and Conclusion

The present study aimed to determine the fit of the proposed model of general health for Iranian immigrants based on cognitive flexibility and perfectionism with the mediation of acculturation stress. The findings indicated that cognitive flexibility impacts the general health of immigrants. This finding is consistent with the studies (Aghajani & Samadifard, 2019; Sadri Damirchi et al., 2018), which showed a relationship between cognitive flexibility and mental health. Additionally, this finding aligns with the studies of Miranda et al. (2013) and Dickstein et al. (2007), suggesting that cognitive flexibility is a good predictor of suicidal thoughts and the severity of depression. Individuals

with flexibility, exhibiting adaptable and easy-going temperaments, elicit positive responses from others. These individuals not only possess good interpersonal skills but also initially exhibit coping skills (Dickstein et al., 2007; Miranda et al., 2013). As cognitive flexibility develops, individuals gain a greater ability to use cognitive approaches like reappraisal and regulate their emotions, consequently experiencing better mental health (Ritter et al., 2012). In fact, cognitive flexibility is a component of cognitive communication skills and may be a key determinant in understanding the self-efficacy required for decision-making in a healthy lifestyle; decisions that can ultimately affect the psychological well-being and general health of immigrants.

The study's findings also demonstrated that perfectionism affects the general health of immigrants. This aligns with the results of previous studies (Besharat et al., 2020; Macedo et al., 2015). Besharat et al. (2020) showed that dimensions of perfectionism can predict depression and anxiety (Besharat et al., 2020). Furthermore, Macedo et al. (2015) found that perfectionism predicts most mental distresses. Perfectionism is an abnormal pattern of behaviors that can lead to numerous disorders (Macedo et al., 2015). Striving for success and conscientiousness involve tangible and appropriate expectations (challenging but attainable goals), leading to satisfaction and happiness. In contrast, perfectionism involves inappropriate levels of expectations and tangible goals (like perfection) and a perpetual lack of contentment, regardless of performance. Perfectionism is a constant source of stress, often leaving individuals feeling frustrated and defeated. Perfectionists obligate themselves to be flawless. This constant and persistent expectation is a source of stress, jeopardizing an individual's general health. Perfectionism, as a persistent inclination to set unattainable standards and strive for them, coupled with critical evaluations of personal performance, is associated with various negative consequences such as feelings of failure, guilt, indecisiveness, shame, procrastination, and low self-esteem, as well as certain mental disorders like alcoholism, anorexia nervosa, depression, and personality disorders, leading to reduced mental health and, consequently, general health in individuals. Since perfectionists are always seeking to meet their standards and personal criteria, they experience a narrower range of normal healthy emotions and, instead, their emotions fluctuate only between relief and panic, leading to a diminished sense of life satisfaction and general health.

Additionally, the study's findings showed that acculturation stress affects the general health of immigrants.

This finding is in line with the studies of Bae (2020) and Cano et al. (2015), which indicated that increased acculturation stress is associated with increased symptoms of depression (Bae, 2020; Cano et al., 2015). Similarly, Stevens et al. (2015) showed that post-migration stress factors affect emotional and behavioral problems. Major sources of stress for immigrants include personal relationships, work pressures, lack of control over affairs, environmental pressures, and internal conflicts (Stevens et al., 2015). Acculturation stress stems from these pressures and problems. If individuals are unsuccessful in the acculturation process, they experience psychological pressure and stress, leading to various problems in life. When faced with changes and challenges like learning a new language, cultural and normative differences, and detachment from their ancestral culture, the process of adapting to a new environment becomes stressful for them. Therefore, in the adaptation process, barriers that cause stress also impact other aspects of their lives. All these factors intensify after immigration, so immigrants experience more stress than before migration.

## 5. Limitations & Suggestions

The study's limitations include the use of convenience sampling, which may impact the generalizability of the results to the broader population of Iranian immigrants. The cross-sectional design of the study limits the ability to establish causality between the variables. Reliance on self-report measures raises concerns about potential biases, such as social desirability or inaccurate self-assessment. Additionally, the study's focus on a specific immigrant group may not capture the diverse experiences and cultural nuances of other immigrant populations. Finally, the statistical methods employed, while robust, may not account for all potential confounding factors.

In a general summary, the results of this study demonstrated that increasing cognitive flexibility and reducing negative perfectionism leads to decreased acculturation stress and improved general health in immigrants. Therefore, it is predicted that by fostering cognitive flexibility and positive perfectionism, it is possible to reduce acculturation stress and maintain mental health in immigrants and even prevent the phenomenon of migration. These results are based on the study sample obtained through convenience sampling. It is evident that this factor should be considered in generalizing the results. It is also suggested that future studies use probabilistic sampling.

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## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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None.

## Authors' Contributions

This article is derived from the first author's doctoral dissertation at the Central Tehran Branch, Islamic Azad University, Tehran, Iran." The dissertation topic was approved by the relevant specialized committee of the Educational and Postgraduate Studies Council of the Faculty of Humanities, Central Tehran Branch, on September 22, 2021, with the tracking code 162468167.

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