Prediction of Mental Health in Infertile Females based on Personality Traits and Time Perspective

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Abstract

Background: Infertility cannot be considered only as a disorder of organ function and other aspects of it should be considered as well.

Objectives: The present study aimed to predict the mental health of infertile females based on personality traits and time perspectives.

Methods: This descriptive-correlational study included all infertile females (20-40 years) who had been referred to the infertility center in Shahid Beheshti University of medical sciences in Tehran, Iran, in the autumn of 2019. In total, 300 infertile females were selected using the convenience sampling method. The research tools included Zimbardo Time Perspective Questionnaire (1991), Revised NEO personality inventory (Costa & McCrae, 2007), and General Health Questionnaire (Goldberg & Hiller, 2012). The data were analyzed in SPSS software (version 22) through the multivariate regression statistical method.

Results: The results showed that neuroticism (Beta=-0.12, P<0.001), extraversion (Beta=0.16, P<0.002), openness to experience (Beta=0.38, P=0.003), agreeableness (Beta=0.45, P=0.002), conscientiousness (Beta=-0.32, P=0.001), Past-Negative (Beta=-0.19, P=0.001), Past-Positive (Beta=0.16, P=0.001), Present-Hedonistic (Beta=0.92, P=0.002), Present-Fatalistic (Beta= 0.92, P=0.001), and future (Beta=0.43, P=0.002) were significant predictors of mental health in infertile females.

Conclusion: Based on the obtained results, personality traits, as well as time perspective, can predict the rate of mental health in infertile females to some extent. Therefore, it is suggested that females be educated about these concepts.

Keywords: Female, Infertility, Mental health, Personality traits

Introduction

Infertility is a medical disorder with biological, psychological, and social aspects. Therefore, infertility should not be considered only as a disorder of organ function and other aspects of this phenomenon should be considered as well. Until January 18, 2012, one in four couples was suffering from infertility in developed countries (1). There are a series of expected steps in life that most people go through predictably. For many people parenting is a stage of life that indicates the expansion of the current family. However, infertility prevents couples from transferring to the parenting stage. It disrupts the order of life activities, the roles of individuals, and family functions. In general, the individuals' reaction to the issue of infertility is influenced by family connections, marriage styles, ethical and legal laws, religious beliefs, and cultural factors. Therefore, in understanding infertility, the importance and the effect of these factors should not be ignored (2).

The results of a study conducted by Tamanaifar revealed that infertile females have less mental health and marital adjustment compared to fertile females (3).

The couples who are diagnosed with infertility face many problems, including sexual dysfunction, decreased self-esteem, obsession about pregnancy, hopelessness, confusion, nervousness, suicidal thoughts, low self-esteem, problematic inter-personal communications, suppressed anger, unconscious sense of guilt, feelings of imperfection, and loneliness, impulsive behaviors, despair, inability to follow the process of diagnosis and treatment, the sense of self-deprecation, feeling of inefficiency, grief, threats, emotional distress, separation, divorce, blaming others, conflict, identity problems, constant worry about the outcome of treatment, fatigue due to commuting to medical centers, constant inquiry of those around them, fear of family disintegration, loss of interest in the spouse, and potential stresses caused by infertility treatments. The overall prevalence of psychological problems in infertile couples is between 25% and 60% (4). Moreover, based on the results of a study, mental health, happiness, and marital satisfaction in fertile females were higher, compared to infertile females, while inferiority and marital conflicts were higher in infertile females (5).

It seems that personality traits are one of the factors related to mental health in infertile females. The five-factor theory of personality is considered one of the most important models offered for personal traits. The general consensus among psychologists is that all personality traits can be presented in five major traits, including openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Studies indicated that personality traits play an important role in both infertility and its consequences. There is evidence that shows psychological problems caused by infertility can lead to the exacerbation of the infertility impacts on females. Awareness of personality traits is useful in coping with everyday problems. Individuals' interpretation of the world and their reactions to stressful situations are influenced by their personality traits. It should be noted that some personality traits are more flexible than others. People with inflexible personality traits, as well as those who are not able to adapt themselves to the demands of a particular situation, lack living skills and show inappropriate reactions to challenging situations. Many personality theorists believe that the social environment plays a role in human personality (6).

According to Brothers et al., it seems that the perspective of time is also related to mental health in infertile females, in addition to personality traits (7). The individual's perception and expectation of the future have three parts: opportunity, limitation, and ambiguity. Positive time perspective is associated with healthy behaviors, decision-making, and success in work in middle age and old age. Transparent orientation enables people to take more risks on their way to achieve ambitious goals (8). Brothers et al. (1) see the time perspective as a person's self-awareness capacity that enables s/he to think in time, predict the future, and think about the remaining time of her/his life. As people get older, they pay more attention to the limitation of one's time in life and that every day they come closer to the end of their lives (9). Furthermore, Brothers et al. (2) believe that as people get older, their wider time outlook is associated with future life gains, and their limited time perspective is associated with the lack of life in the future.

With a negative schema towards the future and pessimistic thoughts about future opportunities and prospects, people gradually perceive the future as sad, hopeless, difficult, useless, and frustrating. Negative time perspective caused by infertility at the end of females' fertility period can lead to females' depression. However, females can experience a more satisfactory life if they take advantage of the opportunities, accept restrictions, and reduce the uncertainties that they are facing in the future (10).

In recent decades, researchers have conducted studies on the perspective of time. The term was introduced especially after the 1990s when Zimbardo and Boyd began researching the field (11). However, studies conducted on the time perspective go back to the beginning and middle of the twentieth century. The first step of time perspective includes a future-oriented time perspective, future-based orientation, planning the future, or goals for the future. From now on, the time perspective has a cognitive structure and is a motivation for change. The second step implies the concept of a time perspective as a multi-dimensional phenomenon. In the second dimension, the time perspective is based on conceptual definitions, another part of the mind, and the process by which individuals automatically share their personal psychological experiences in the dimensions of the future, present, and past.

Objectives

Little research has been conducted on finding the relationship among the three variables of this study in infertile females. The present study aimed to predict mental health based on personality traits and time perspectives in infertile females and investigate whether personality characteristics and time perspectives could predict mental health in infertile females.

Methods

The participants in this descriptive-correlational study consisted of infertile Iranian females between 20-40 years who were referred to the centers and hospitals affiliated with Shahid Beheshti University of Medical Sciences in Tehran, Iran, in 2018. Inclusion criteria included females with the problem of infertility (i.e., females that could not get pregnant after 12 months of regular unprotected sexual intercourse), no history of important physical and psychological illnesses, and no history of gynecological surgery or assisted reproductive techniques. The sampling was performed using the convenience sampling method.

The data were collected using the field data collection technique through the questionnaire. In order to provide the ground for the implementation of the questionnaires, the patients were referred to the medical centers, and the written consent was obtained from the center's authorities. Before the distribution of questionnaires, preliminary explanations were provided to the participants regarding the research objectives, scales, and the way the questionnaires should be completed. The participants were ensured about the confidentiality of the information entered and the optionality of writing their first and last names. It has been written on top of the first page of the questionnaires that "these questions have been prepared and provided to you for research work on females. Try to answer all the questions honestly and accurately and this way help us conduct the research". Participants had to initially respond to the demographic questions, including age, gender, education level, employment, and economic status, and health, and afterward respond to the remaining items of questionnaires. A few students cooperated with the

researchers in the implementation of the questionnaires.

Regarding the ethical considerations, it should be noted that all the individuals received written information about the research. Participation in the study was based on the individuals' willingness. The participants were ensured about the confidentiality of their information. In order to respect privacy, the participants' names and surnames were not registered.

NEO five-factor personality inventory

This 60 items scale has developed for a brief and rapid evaluation of the five main personality traits (neuroticism, extraversion, flexibility, agreeableness, and conscientiousness). This scale and the five-factor personality model were presented by Costa and McCare. This questionnaire included 60 items that were scored based on a five-point Likert scale ranging from completely disagree to completely agree. Each 12 items in this scale measured one of the five personality traits. The validity of this questionnaire was estimated at 0.83 0.75, 0.80, 0.79, and 0.79 for neuroticism, extraversion, openness, agreeableness, and conscientiousness, respectively (12).

Zimbardo Time Perspective Inventory

This scale was developed in 1991 by Zimbardo and Boyd and includes 56 items which are scored based on a five-point Likert scale; from completely agree to completely disagree. This scale distinguished five types of time perspectives: past negatives (10 questions), past positive (9 questions), present hedonistic (9 questions), present fatalistic (15 questions), and future (13 questions). Moreover, Cronbach's alpha of all subscales was estimated at 0.74.

General Health Questionnaire (GHQ-28)

This 28-item scale was developed in 2012 by Goldberg and Hillier to identify non-psychotic mental disorders and has been widely used to diagnose mild mental disorders and screen non-psychotic psychological disorders in medical centers and other health communities. This scale includes four subscales and each subscale has seven items. These four subscales evaluate physical symptoms, anxiety, sleep disorder, social dysfunction, and severe depression, respectively. The items of each subscale are in a back-to-back order. some research conducted on students and employees in Iran estimated the reliability of the Persian version of the GHQ-28 questionnaire at 0.84, 0.91, 0.88, 0.62, 0.92, 0.89, and 0.82, respectively (13). The reliability coefficient of the test in this study was obtained at 0.90.

The data were analyzed using the correlation coefficient and multiple regressions and statistical analysis of the data was performed using SPSS software (version 22).

Results

The age range of the female participants was 20-40 years in this study. The high values of Cronbach's alpha indicated the high validity of the questionnaire.

Table 1. Mean, standard deviation (SD), and Cronbach's alpha coefficient of the study variables

Variables		M	SD	Cronbach's alpha
Mental Health		49.33	6.94	0.77
Time Perspective	Past-Negative	37.43	6.21	0.68
	Past-Positive	32.96	4.90	0.67
	Present-Hedonistic	46.73	7.11	0.75
	Present-Fatalistic	24.31	5.29	0.68
	Future	47.09	6.44	0.76
Personality	Neuroticism	29.01	9.73	0.72
	Extraversion	29.13	12.70	0.64
	Openness to experience	25.12	12.44	0.68
	Agreeableness	27.23	11.79	0.75
	Conscientiousness	23.48	11.54	0.66

Table 2. Results of variance analysis of mental health prediction based on personality characteristics and time perspective

Variable		SS	Df	MS	F	P	R	R²
Neuroticism	Regression	4321.05	1	4820.12	56.37	0.001	0.572	0.327
	Residuals	17423.18	298	63.93				
Extraversion	Regression	5627.52	2	5102.06	54.59	0.001	0.593	0.351
	Residuals	18342.17	297	60.60				
Openness to Experience	Regression	5937.82	3	4923.51	57.65	0.001	0.571	0.326
	Residuals	20168.11	296	58.41				
Agreeableness	Regression	6183.13	4	5023.05	58.11	0.001	0.592	0.349

		SS	df	MS	F			
	Residuals	21105.11	295	58.58				
Conscientiousness	Regression	6318.49	5	5231.58	59.58	0.001	0.611	0.373
	Residuals	22317.93	294	58.72				
Past-Negative	Regression	6321.48	6	5386.06	61.04	0.001	0.618	0.381
	Residuals	23173.96	293	59.21				
Past-Positive	Regression	6520.68	7	5394.12	62.11	0.001	0.601	0.361
	Residuals	23531.82	292	61.04				
Present-Hedonistic	Regression	6711.60	8	5512.03	63.06	0.001	0.611	0.373
	Residuals	24100.15	291	62.62				
Present-Fatalistic	Regression	6871.17	9	5716.94	65.15	0.001	0.632	0.399
	Residuals	24762.84	290	63.17				
Future	Regression	6982.82	10	5927.05	66.66	0.001	0.668	0.446
	Residuals	26012.48	288	65.41				

Note: SS= sum of squares: df= degree of freedom; MS: Mean of square.

The results of Table 2 are presented in two stages. In the first step, the variable of personality characteristics was entered into the equation. Personality characteristics predicted up to 37% of mental health changes. In order to significantly investigate the regression model, an analysis of variance was performed. The results showed that the F value was significant in the first five stages when the personality characteristics variable was entered into the regression equation. In addition, the observed F value was also significant in the second step that contained the time perspective variable. Based on these findings, it can be said that both personality characteristics and time perspective variables have been able to predict mental health changes in infertile women.

Table 3. Regression coefficient of mental health prediction based on dimensions of personality characteristics and the time perspective

Predicting variables	**Unstandardized coefficients**		**Standardized coefficients**		
	B	**Standard Error**	**(Beta)**	**t**	**P-Value**
Constant	-7.46	3.14	-0.17	-1.63	0.001
Neuroticism	-2. 21	0.44	-0.12	-1.45	0.001
Extraversion	0.94	0.73	0.16	0.23	0.002
Openness to experience	4.05	2.03	0.38	0.83	0.003
Agreeableness	3.17	0.26	0.45	1.11	0.002
Conscientiousness	-2.69	0.30	-0.32	-2.03	0.001
Past-Negative	-2.15	1.11	-0.19	-0.82	0.001
Past-Positive	3.07	1.23	0.16	0.86	0.001
Present-Hedonistic	2.48	1.65	0.92	0.80	0.002
Present-Fatalistic	-3.07	2.14	-2.11	-0.87	0.001
Future	4.58	2.16	0.43	0.57	0.002

The data in Table 3 showed that neuroticism (Beta=-0.12, P<0.001), extraversion (Beta=0.16, P<0.002), openness to experience (Beta=0.38, P=0.003), agreeableness (Beta=0.45, P=0.002), conscientiousness (Beta=-0.32, P=0.001), Past-Negative (Beta=-0.19, P=0.001), Past-Positive (Beta=0.16, P=0.001), Present-Hedonistic (Beta=0.92, P=0.002), Present-Fatalistic (Beta= 0.92, P=0.001), and future (Beta=0.43, P=0.002) were significant predictors of mental health in infertile females.

Discussion

The present study aimed to predict mental health based on personality traits and time perspectives in infertile females. The results showed that personality traits and dimensions of time perspective have the ability to predict mental health in infertile females. This finding was in line with the results reported in other similar studies conducted by Peterson and Newton (14) and Martschenko et al. (15). The presentation of fertility and productiveness are among superior human needs, and personality development through the realization of oneself in one's children paves the way for other meaningful goals in life. The failure at this stage of life due to physical and psychological conditions drives the person to despair and causes serious psychological damage. The psychological effect of this phenomenon is devastating and can bring about the collapse of marital life. Moreover, not only an infertile female cannot bear a child, but she also may lose her relationships with family and friends; therefore, she may feel lonely and isolated as a result. Moreover, these females are blamed on behalf of themselves and others and may lose their identity

as a woman. All these can raise their neurotic score and explain their significant differences from other groups of females (16).

Infertility is a relatively strong stressor in one's life. In the middle of age, unpleasant events such as the onset of illness, disability, the death of a spouse, family, or friends, retirement from the job, economic problems, the need to take care of parents and elderly relatives, and separation from children may occur (17). Therefore, problems unrelated to infertility may be incorrectly attributed to infertility, in different life situations. However, the evidence indicates that most of the symptoms and problems that occur are due to the social conditions and personality type of the individual and are not due to hormonal changes. Whenever individuals are under severe stress, their tolerance threshold is lowered. Therefore, they are less flexible and this, in turn, prevents them from showing proper and adaptive responses in stressful life situations (18).

Also, since infertile people are isolated and their self-esteem is lowered, they reach a state where they feel they are not loved by others and this feeling, in turn, affects their adaptability, satisfaction, and relationships negatively. Infertility causes problems in females' inter-individual relationships, marital relationships, and disharmony between individual's demands and the situation that they are involved in due to the higher psychogenic disorder rate. Time perspective is a preventive strategy and prevents high-risk behaviors that are caused by people's estimation of the future, based on the theory of risk-taking equilibrium. Personality traits play an undeniable role in different aspects of life. It seems that people are more afraid of the future; therefore, the rate of infertility in a society does not depend on technology and safety education, rather it depends on common social values. In other words, people's prospect of the future is very important. The ability to endure delays in reward is very important in the field of education and learning. Sometimes people are forced to choose between an immediate reward and short-term pleasure or long-term pleasure with future rewards. The prospect of the future helps individuals develop skills, attitudes, and motivation and enables them to identify their possible future or future preference (19).

Regarding the limitations of the present study, it can be said that the present study was limited to pregnant females who were referred to the infertility center of Shahid Beheshti University of Medical Sciences, Tehran, Iran. Moreover, since this was a correlational study, it was not possible to create a cause-and-effect relationship between variables. Eventually, based on the findings of this study, it is suggested that females' perspectives should change to a more positive one through planning the programs that aim to enhance their abilities and improve the status of their mental health. Similar studies and experimental research projects need to be conducted on infertile females at different age ranges and in different places in the country.

Conclusion

Based on the results, personality traits, as well as time perspectives, can predict the rate of mental health in infertile females to some extent. Therefore, it is suggested that females be educated about these concepts.

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