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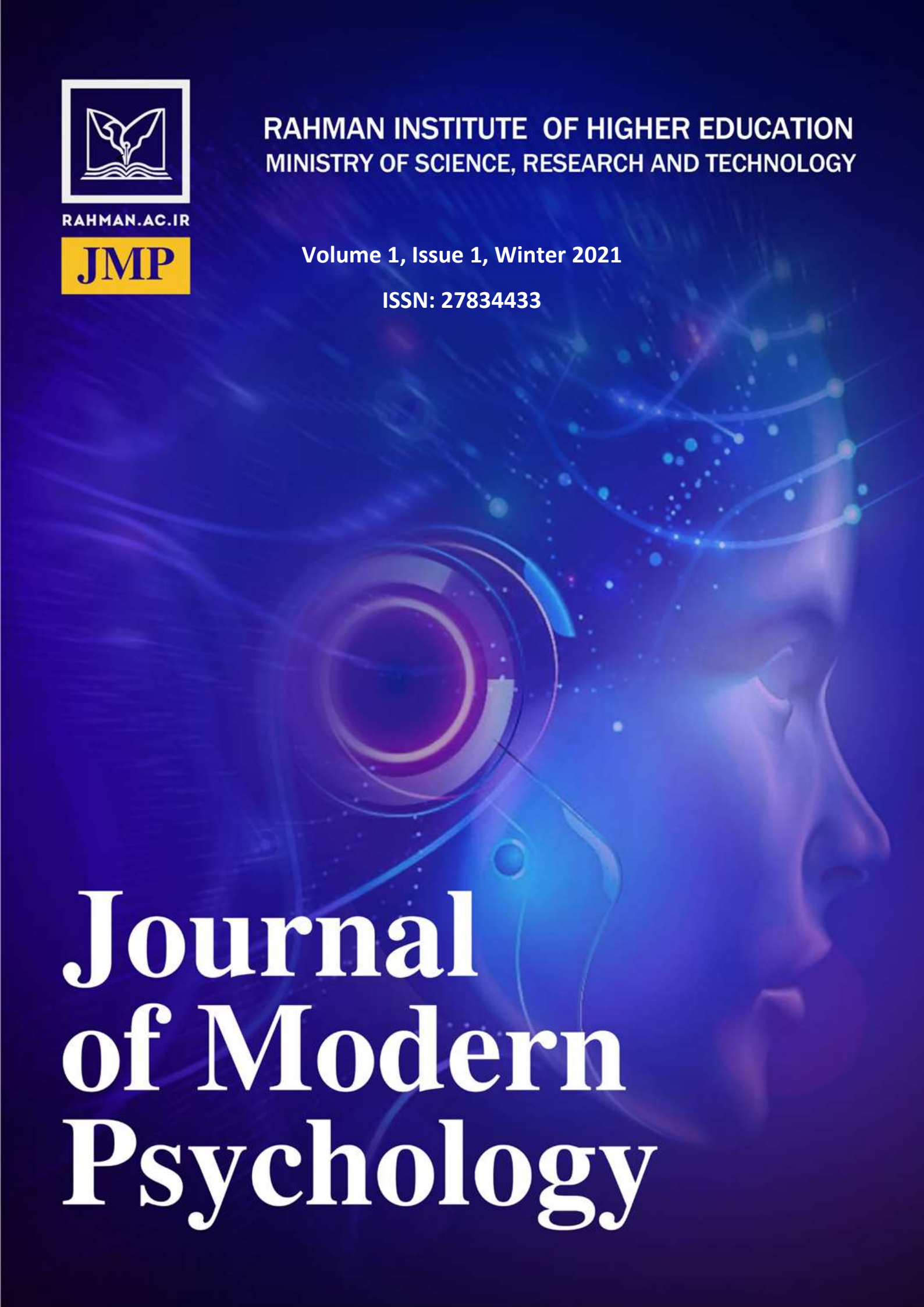

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Rahman Institute of Higher Education

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Contents

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Journal of Modern Psychology

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Journal of Modern Psychology

Research Paper: Comparison of the Effectiveness of Brief Self-Regulation Couple Therapy and Spirituality Therapy on Social Perspective Taking Mothers with Intellectually Disabled Children

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Abstract

An intellectually disabled child has some negative effects on parents' mental health. Social Perspective-taking is one of the variables that affects mothers of intellectually disabled children. The present study aims to compare the effectiveness of Brief Self-Regulation Couple Therapy and spiritual therapy on the social perspective-taking of mothers with the intellectually disabled children**.** This was an experimental study with a pretest-posttest design and a control group. The statistical population consisted of all mothers with intellectually disabled students in Tehran 14th district, selected by simple random sampling and divided into three Brief Self-Regulation Couple Therapy (n = 10), Spirituality Therapy (n = 10) and control (n = 10) groups. The data collection tool was Social Perspective-Taking Scale. The data were analyzed through descriptive statistics, multivariate analysis of covariance and SPSS-24 statistical software. Analyzing the data showed that both methods of Brief Self-Regulation Couple Therapy and spiritual therapy, affect the social Perspective-taking of mothers with intellectually disabled children. In addition, the results of comparing the two methods showed that spirituality therapy is more effective than Brief Self-Regulation Couple Therapy on the social Perspective-taking of mothers with intellectually disabled children. Regarding the effectiveness of Brief Self-Regulation Couple Therapy, both methods can be used to improve Mothers' social Perspective-taking with intellectually disabled children.

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1. Introduction

Neurodevelopmental disorders are those in which the proper development of the brain or central nervous system is impaired, which in reference to problems with the functioning of the brain and nervous system that negatively affect a person's excitement, learning ability and memory as they grow. The term 'mental retardation' was used in the Fourth Edition Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). However, the Fifth Edition Diagnostic and Statistical Manual of Mental Disorders (DSM-5) uses the term 'intellectual disability. In DSM-IV, the first main diagnostic criterion for such a disability for IQ was much lower than average indicated by IQ less than 70 (Two standard deviations less than the norm). However, the IQ criterion has been removed in DSM-5. Eliminating the IQ criterion resulted in more focusing on the level of adaptive performance of the individual. Furthermore, the developmental criteria indicate that the intellectual disability of children must have occurred before the age of 18, i.e., during their development. Intellectual disability is a disorder that consists of deficits in both mental functioning (such as deficits in reasoning, planning, abstract thinking, judgment, and academic learning) and adaptive functioning (such as inability to achieve developmental and sociocultural standards for independence and social responsibility in one or more environments) (Ganji, 2013).

Intellectual disability disorder begins in the developmental period and involves intelligence deficits and adaptive functioning in the practical, social, and conceptual domains. The prevalence of such a disorder is about 1% (American Psychiatric Association, 2013). Additionally, based on various statistics, it covers approximately 1%-2% of the population of the countries (Abbasi, Karimi & Jafari, 2016). In a study conducted by Bhatia, Bhatia, Gautam, Saha and Kaur (2015), it was found that the existence of a mentally retarded child can have profound effects on how each member of the family communicates with each other. Wood and Bhatnagar (2015) state that mothers are more vulnerable than those of other family members.

According to Madelein, Jenna, Angela & Barbara (2015; cited in Ghadmpour, Qasemzadeh, Zolfaghari & Padarvand, 2020) one of the most important reasons for mothers who are more vulnerable than those of other family members is that mothers spend more time with their children and their presence in the home and family environment is much higher than that of fathers . In a study titled Mental Health of Parents of intellectually disabled children, it was found that parents of intellectually disabled children experience more aggressive behaviors, depression, physical complaints, interpersonal sensitivity, and anxiety than those who have normal children (Firouzi, Khan Mohammadi & Homayouni, 2015).

Accordingly, although all family members are affected in such a situation, the mother suffers more stress and emotional pressures than the child’s father due to her special role in pregnancy and childbirth, child care and education. Therefore, this double emotional pressure threatens their mental health, affect the health and well-being of spouses, other healthy children in the family and their disabled child, as well as a wider level of the mental health of society as a whole

(Rezaian, Hosseinian & Asna Ashari, 2014). As a result of having an intellectually disabled child, parents experience more parenting stress. Among such families, children's behavioral problems are associated with parenting stress (Meppelder, Hodes, Kef & Schuengel, 2015).

An intellectually disabled child causes some negative effects on parents' mental health while mental health and social support are important factors that affect the way parents treat their intellectually disabled children (Wade, Llewellyn & Matthews, 2015). One of the variables that affects such mothers is social perspective-taking, which is regarded as one of the social-cognitive skills necessary to continue collective life and establish successful social interactions (Mohagheghi, ZoghiPaydar, Yaqubi, YarmohammadiVasel & Mohammadzadeh, 2016). Social perspectives, both "perspective-taking" and "role-taking", reflect the cognitive and emotional dimensions of a skill that allows one to empathize with another while maintaining unity (Galinski, Ko and Wong, 2005; cited in Yaghoubi and Mohammadzadeh, 2016).

When people in social situations correct their cognizance due to understanding the views of others, it makes their social interactions effective (Karney & Gauer, 2010). People should be able to put themselves in another person's shoes and see the world through his/her lens, empathize with what he/she feels, and attempt to look at and think of the world as he/she observes it (Flavell, 2004). Accordingly, having social relationships and receiving support from others are important factors in coping with the challenges of an intellectually disabled child in the family (Rathore & Mathur, 2015). Such mothers have serious problems with social health and have a sense of cohesion and social capital compared to those of healthy children (Kimura & Yamazaki, 2016). Accordingly, some interventions are necessary to improve social cognitive skills and establish successful social interactions among the mothers of intellectually disabled children. Brief Self-Regulation Couple Therapy and spiritual therapy are among the effective methods to improve the psychological and social problems of mothers with disabled children. Brief Self-Regulation Couple Therapy is considered as one of the methods showing the application of behavioral self-control theory in relationship problems. Brief Self-Regulation Couple Therapy emphasizes that it helps troubled couples gain more competence to change problematic behavioral, cognitive, and emotional patterns, thereby strengthening their relationship. The ability to self-regulate relationships depends on individuals, based on how much they have high-level, separate and interrelated skills such as relationship evaluation, goal setting, self-alteration implementation, and effort evaluation. (Kim et al., 1994).

The study by Mirahmadi, Ahmadi and Bahrami (2012) showed the effectiveness of short-term couple therapy in a self-regulatory manner on happiness and couples' mental health. In addition, self-regulated couple therapy is effective in reducing marital stress of couples (Nowrouzi, Nazari, Rasouli, Davarnia and BabaeiGarmkhani, 2015). However, it refers to a set of ways to understand the meaning and concept of life in spiritual

therapy as a method of intervention (Lotfi Kashani, Mofid & SarafrazMehr, 2013).

Religious orders and spirituality can shape and influence the lifestyle of individuals, providing the ground for their growth and prosperity. Religion and spirituality can be used when parents feel empty and frustrated, struggling with stress, or when they are in pain and lonely, frustrated with the help of others, and find ways to reduce their physical and mental pain, and find a place to provide them with peace of mind (Qahramani & Nadi, 2012). The study by Hassani, Alizadeh, Bonab, Pezeshk and Kazemi (2020) indicated that the method of spirituality intervention can be used to enhance the marital satisfaction of mothers with intellectually disabled children.

Furthermore, Pandia (2020) found that the spiritual messages sent in the WhatsApp space have been effective in reducing stress and increasing the self-confidence, self-efficacy and flexibility of mothers who have children with a social anxiety disorder. Therefore, based on the statistics reported by the Rehabilitation Deputy of the Welfare Organization of Iran in 2010, there are approximately 3 million and two hundred thousand disabled people in the country, of which 215 thousand people have intellectually disabled children. They are covered by the welfare organization (Welfare Organization of the whole country, 2010; cited in Firouzi et al., 2015). It was found that a significant number of families in Iranian society suffer from the adverse effects of having a child with intellectual disability, and research on improving the mental health of mothers with such children is necessary.

Accordingly, the present study aimed to answer the following questions:

1) Is brief couple therapy in self-regulation and spiritual therapy is effective in the social perspective-taking of mothers with intellectually disabled children?
2) Which of these treatment methods is more effective on the social perspective-taking of mothers with intellectually disabled children?

2. Method

This is an experimental study with pretest and posttest design with the experimental and control groups. The statistical population consisted of all mothers with intellectually disabled children studying in special schools in the 14th district of Tehran during 2018-19, which was a total of 90 people. (All intellectually disabled students attending in the special school were teachable and had an IQ 50-70). To select the sample, the social perspective-taking scale was first administered to all mothers (n= 90) (pretest). After the initial review of the results of the questionnaires, 50 mothers with intellectually disabled children met the inclusion criteria among all members of the community. Inclusion criteria included obtaining a lower social perspective-taking score than other mothers (The score ranged between 15 and 75). The lower the score obtained from this questionnaire and closer to the score of 15, a lower level of social perspective-taking, having at least one intellectually disabled child, without using counseling at the same time during classes and taking sedatives and antidepressants. The standard for the group participants was to meet a minimum of guidance school education. Then, 30 people were randomly selected and divided into three groups of 10

people.10 mothers in the couple therapy group (10 sessions of 60 minutes) underwent self-regulated couple therapy, 10 mothers in the spiritual therapy group (10 sessions of 60-minute) and 10 people were in the control group who did not receive training. As much as possible, people in the experimental and control groups were mostly similar to each other (an attempt was made to match people based on age and level of education so that such variables had the least impact on the external validity of the research). Treatment sessions were held for the two experimental groups once a week, in the early morning when mothers came to school to bring their children. Therefore, the subjects did not fall in any of the experimental and control groups and the number of people in each group remained constant until the end of the study. After the treatment sessions, posttest was performed in all three groups. Furthermore, the mothers of all 3 groups answered the same social perspective-taking scales in the pretest as the posttest. The data collected from pretest and posttest questionnaires were analyzed by appropriate statistical tests and all the mothers who participated in the study were appreciated.

Self-Regulation Couple Therapy sessions, adapted from the theory of self-regulatory couple therapy by Halford, Markman, Kling and Stanley (2003) are as follows (Table 1).

Table 1. Self-Regulation Couple Therapy sessions

Session	Content
First	Obtaining written consent from mothers and explaining the research process and reassuring mothers that their information remains confidential
Second	Familiarity and motivation for change (introducing group members, motivating to participate in training sessions, defining the social perspective-taking and its dimensions for mothers)
Third	The first self-assessment (discussion of intimacy and positive activities and its impact on marital relationships, examining the level of mutual support between husband and wife)
Fourth	Goal setting (discussing the goal using self-changing questions, expressing the technique of increasing positivity in daily interactions)
Fifth	Establishing communication (teaching how to communicate properly through the awareness cycle, expressing communication skills)
Sixth	Beliefs and expectations (expressing cognitive errors affecting marital disputes, expressing happy living skills to mothers)
Seventh	Learning cycle (expressing knowledge cycle skills in different areas)
Eighth	Problem-solving (problem-solving technique training, feedback)
Ninth	Self-assessment (checking the goal achievement)
Tenth	Summarizing the previous sessions and performing post-test

Spiritual therapy sessions (Table 2) are adapted from the research conducted by Lotfi Kashani et al. (2013).

Table 2. Spirituality therapy sessions

Session	Content
First	Obtaining written consent from mothers and explaining the research process and reassuring mothers that their information remains confidential. Familiarizing the members with each other, expressing group rules, respecting for each other's opinions and tolerance of different views, number and time of meetings and continuous attendance until the end of treatment were discussed
Second	This session aimed to get to know the implicit and personal meaning of spirituality and its definition from the point of view of each member to examine the existence of belief in a superior and sacred force among the members.
Third	This study aimed to self-observe and explain meditation. Process: What they did this week related to spiritual practices and expressed their feelings and emotions resulting from such actions and emphasizing the members' feelings in the face of each action. Teaching meditation technique and practicing it daily until the end of the training
Fourth	Explaining people's experiences of meditation and focusing on a specific topic, investigating the effects of meditation.
Fifth	This session aimed to present the concept of infinity and connection to the eternal force. The process was to ask if you had lost someone you loved. How do you feel about that person right now? Do you have a spiritual or religious perspective on this loss? Emphasizing talking about the week after forgiveness for yourself and others and the spiritual feeling they had this week
Sixth	It was aimed to understand forgiveness. The process was like this: Who has been thinking about forgiveness since last week? Who are we going to forgive? Forgiveness to those with whom we have and don't have any relationship. How does forgiveness make you feel? Practicing meditation and reciting the prayers of my God before you. I forgive those who have bothered me or harmed me. You are omnipotent, I do not leave them to you and I ask you to forgive them
Seventh	Forgiveness and generalization were to control anger. Explaining the importance of expressing the power of anger to others and asking for help.
Eighth	It aimed to examine the experiences of forgiveness and to express positive feelings and experiences of forgiveness and spiritual practices.
Ninth	It aimed to be grateful for the positive changes caused by spirituality and to give meaning to difficult experiences.
Tenth	Summarizing what was said in the previous sessions and finally, the posttest was performed.

Social Perspective-taking scale: In this study, Mohagheghi et al.'s Social Perspective-taking scale (2016) was used. It has 15 items which includes four subscales such as cognitive prediction of others, perception of others' perspective, empathizing and respecting for differences. In addition, regarding the items like (I'm a good predictor of what the other person wants to do), it measures students' social perspective-taking. It is graded on a five-point Likert scale, with a score of 1 for strongly disagreeing, 2 for disagreeing, 3 for abstaining, 4 for agreeing, and 5 for strongly agreeing. The score ranged from 15 to 75. The higher the score obtained

from this questionnaire, the more social perspective-taking the participants will tend to be, and vice versa. The Social Perspective-taking scale had a positive and significant relationship with the Oxford Happiness Questionnaire and a negative and significant relationship with the Beck Anxiety Questionnaire, indicating the convergence and divergence validity of the questionnaire (Mohagheghi et al., 2016). Additionally, in the research conducted by Mohagheghi et al. (2016) on 470 women and 280 men, the reliability obtained by Cronbach's alpha of 0.78 and the reliability coefficient above 0.70 indicate the high reliability of the test. Cronbach's alpha coefficient was used to examine the internal consistency of the questionnaire. The results for the four subscales of cognitive prediction of others, empathizing, perception of others' perspective, respect for differences, and the total score of social perspective-taking were estimated to be 0.75, 0.81, 0.69, 0.71, and 0.91, respectively.

3. Results

The data were analyzed through descriptive statistics and the covariance through SPSS software, ver.24. Covariance analysis with pretest effect was used to analyze the data. Before using the parametric test of covariance analysis, its assumptions were tested. The assumption of the normal distribution of the data was evaluated by the Shapiro–Wilks Test ($p<0.05$). In addition, the assumption of the homogeneity of the coefficients was established. Further, the results of the Leven Test indicated the equalization of variances ($p>0.05$). Besides, since the level of significance is greater than 0.05, the research data met the assumption of homogeneity of variance-covariance matrices. Therefore, this presupposition has also been observed.

Regarding age index, the sample age ranged from 27 to 34 years (26.67%), 35 to 42 years (56.65%) and 43 to48 years (%16.66). The lowest and highest level of education ranged from guidance school (16.66%) to bachelor's degree (46%), respectively

Table 3. The Mean of social perspective-taking in both stages of pretest, posttest depending on testing and control group

Dependent variables	index	Spirituality therapy		couple therapy		Control	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Cognitive prediction of others	Mean	18.10	20.80	18.40	21.20	17.80	18.00
	SD	5.859	4.614	3.406	3.360	4.158	3.944
Perceive the views of others	Mean	7.60	10.70	6.30	8.20	6.70	7.10
	SD	2.413	2.452	2.214	1.932	2.908	2.767
To empathize	Mean	5.70	8.50	5.20	7.40	4.10	4.50
	SD	1.889	1.581	2.300	1.897	1.912	2.273
Respect for differences	Mean	5.70	8.60	5.00	6.80	4.90	5.30
	SD	1.337	2.11	1.826	1.932	1.663	2.111
Total score	Mean	37.10	48.60	34.90	43.60	33.50	34.90
	SD	5.657	5.484	5.567	7.015	7.756	8.467

Table 3 shows the mean social views in the two stages of pretest-posttest depending on the test and control. As shown, the scores of social perspective-taking in the posttest of spiritual therapy and self-regulated couple therapy groups increases while such an increase is not observed in the control group. To compare the mean scores of social perspective posttest and its dimensions after controlling the effect of pretest in three groups, multivariate analysis of covariance test was used, the results of which are presented in Table 4.

Table 4. The results of multivariate covariance to compare posttest scores of social perspective-taking and its dimensions

Dependent variables	Df	F	Sig	Eta squared	Statistical power
Cognitive prediction of others	1	11.46	0.001	0.499	0.985
Perceive the views of others	1	6.216	0.007	0.351	0.848
To empathize	1	11.033	0.001	0.490	0.982
Respect for differences	1	5.871	0.009	0.338	0.826
The total score of social opinion	1	21.123	0.001	0.647	1.00

As shown above, there is a significant difference between the mean of social perspective posttest and its dimensions after removing the pretest effect. Therefore, the mean of social perspective-taking and its dimensions after the test in the experimental group was significantly higher than that of the control group. That is, spiritual therapy and brief self-regulation couple therapy has significantly increased social perspective-taking and its dimensions in the posttest phase. Then, Bonferroni post hoc test is used to compare the effects of spiritual therapy and brief self-regulation couple therapy in the posttest, the results of which are shown in Table 5.

Table 5. The results of Bonferroni test for significant difference between moderating means among the three groups in the post-test stage

Dependent variables	Groups		Mean difference	Sig
Cognitive prediction of others	Spirituality therapy	Control	3.168*	0.001
	Self-regulated couple therapy	Spirituality therapy	0.082	0.999
	Self-regulated couple therapy	Control	3.150*	0.001
Perceiving the views of others	Spirituality therapy	Control	2.712*	0.006
	Self-regulated couple therapy	Spirituality therapy	-1.491	0.172
	Self-regulated couple therapy	Control	2.150*	0.005
To empathize	Spirituality therapy	Control	2.997*	0.001
	Self-regulated couple therapy	Spirituality therapy	-0.849	0.578
	Self-regulated couple therapy	Control	2.147*	0.009
Respect for differences	Spirituality therapy	Control	2.737*	0.007
	Self-regulated couple therapy	Spirituality therapy	-1.272	0.338
	Self-regulated couple therapy	Control	2.461*	0.008
The total score of social opinion	Spirituality therapy	Control	11.513*	0.001
	Self-regulated couple therapy	Spirituality therapy	-3.531	0.165
	Self-regulated couple therapy	Control	7.981*	0.001

P<0.05*

As shown, the difference between the mean of spirituality therapy and control is more than that of brief self-regulatory couple therapy with the control group.

Therefore, with 95% confidence, spiritual therapy is more effective on the social perspective-taking of mothers with intellectually disabled children than that of brief self-regulation couple therapy.

4. Discussion

The present study aimed to compare the effectiveness of brief self-regulation couple therapy and spirituality therapy on the social perspective-taking of mothers with intellectually disabled children. It was found that brief self-regulation couple therapy and spirituality therapy were more effective on the social perspective-taking of mothers with intellectually disabled children compared to that of the control group. The results were consistent with the findings of Hassani et al. (2020), Pandia (2020), Nowruzi, Nazari, Rasouli, Davarnia and BabaeiGarmkhani (2015), Lucchese and Koenig (2013), Mirahmadi et al., (2012), Halford, Wilson, Lizzio and Moore, (2008) and Halford (2003). Explaining the effectiveness of brief self-regulation couple therapy on improving the social perspective-taking of mothers with intellectually disabled children indicated that brief self-regulation couple therapy increases personal commitment and happiness in the family life and helps people gain more competence to change problematic communication patterns and understand the perspective of others (Mirahmadi et al., 2012). Marriage benefits from the skill of observing a couple. Developed insight enables one to overcome the usual self-mediations and behave appropriately against the expectations of others, thus interpersonal relationships will be profitable. Therefore, the lack of communication skills as a result of low self-regulation and blaming the spouse and finding a problem in the spouse's behavior are considered as the reasons for decreasing useful relationships and lack of perspective (Halford et al., 2008). Self-regulation based on therapeutic outcomes can rely on evaluation, negotiation, goal setting, and self-change to enable couples to communicate better. The main goal of brief self-regulation couple therapy is to change the couple's style of evaluating their spouse and their relationship so that they can better understand their spouse, i.e. take a stand and value positive behaviors (Halford et al., 2003). Researchers and psychologists have increasingly considered the role that cognizance plays in couples' relationships, particularly since couples' cognizance about their relationships are causally related to marital helplessness. When people correct their behaviors in social situations because they understand the perspectives of others, it makes their social interactions effective. Therefore, short-term self-regulated couple therapy emphasizes that helping couples is to learn more about changing problematic behavioral, cognitive, and emotional structures in a troubled relationship (Halford et al., 2003). Considering brief self-regulation couple therapy, effective intervention is the process through which couples learn skills to moderate behavior and establish more constructive relationships and a better understanding of each other (Wilson, Charker, Lizzio, Halfird & Kimlin, 2005). This intervention can guide couples in assessing, goal setting and self-change in problematic areas of life and the face of an intellectually disabled child, thus, communication skills and social perspectives taking of couples will increase. Therefore, brief self-regulation couple therapy is logically effective in

improving the social perception skills of mothers with intellectually disabled children.

Explaining the effectiveness of spiritual therapy on the social perspective-taking of mothers with intellectually disabled children showed that spiritual therapy and spiritual self-care reduce psychological stress and increase tolerance for anxiety in people and achieve its peace and relief from the pressures with the problems. It makes the intellectually disabled children remain calm in the face of failures and disabilities and experience lower levels of anxiety (Saeedi Taheri, Asadzandi & Ebadi, 2013). In a study by Slana, Molnarova, Debrikova, and Hromkova (2020) on one hundred and two parents of children with Down syndrome concerning the common needs of such parents, it was found that after the birth of a child with Down syndrome, parents feel severe lack of information and psychological support. Since children's well-being has long been a long-held dream of parents, obviously the slightest problem in the child imposes some level of anxiety on the parents, and religion and spirituality help parents who feel empty and hopeless. In addition, regarding psychological pressures, it provides peace of mind, and helps the individual better understand others and has a more accurate social perspective-taking in the shadow of spirituality. When a person is painful, lonely and hopeless with the help of others and does not find a way to reduce his physical and mental pain, spiritual therapy helps a person create peace of mind and overcome stress; however, anxiety creates a stronger social perspective-taking. Religion and spirituality create psychological power for a person and promote her coping and adaptation to unpleasant conditions (child disability). Utilizing religious beliefs or practices are ways to adapt to physical, psychological and social challenges (Lucchese & Koenig, 2013). However, group religious-spiritual intervention has a positive impact on the inner strength and self-control of female students and this intervention is used to improve psychological resources to increase their self-control (Nosrati, Jafari-Ardi, & Ghobari-Bonab, 2020). Spiritual therapy helps mothers create a positive and clear view of world events for themselves, and by attaching themselves to God, they evaluate seemingly unpleasant events positively and always hope for God's grace and opinion (Falah, Mangali & Zare, 2012). Explaining that spiritual therapy is more effective than that of brief self-regulatory couple therapy on the social perspective-taking of mothers with intellectually disabled children indicated that a mother who takes a spiritual approach to life is always trying to better understand the circumstances of others and asks God for help in hardship and hope for His mercy. Spirituality makes people believe that they will be rewarded for their patience in the face of adversity. Such a person observes things less self-centeredly and will be more able to empathize and understand the thoughts and ideas of others. Accordingly, the rate of the social perspective-taking of mothers with intellectually disabled children increases to a high extent as a result of spiritual therapy. The research by Mann (2010) indicated that people who show more perspective-taking have better mental health and are happier. In addition, if they have mental disorders, they will have a better prognosis for treatment. In addition, Aberson (2007) found that where there is more perspective-taking, anxiety is significantly reduced. Thus, spiritual therapy increases the

readiness of mothers to face the problems and challenges they have in life with their intellectually disabled child.

Since the present study was conducted in Tehran, the research community was limited to Tehran and one should be careful in generalizing the results to other cities. In addition, there was not a follow-up stage to evaluate the durability of brief self-regulation couple therapy and spiritual therapy. Another factor that may have affected the results was the presence of Hawthorn effect. Such an effect is a reaction by which people who are being studied have improved their performance or their behavior through identifying that they are being studied. This reduces the generalizability of the results. To overcome the limitations, it is suggested that such research be conducted in other cities, especially where different cultural and social conditions exist. In addition, the follow-up stage should be considered to evaluate the durability of the effect of the training to determine the validity of the treatment results in further research.

5. Conclusion

The results indicated that both are used to improve the social perspective-taking of mothers with intellectually disabled children and those who have children with problems. In addition, brief self-regulation couple therapy and spiritual therapy, which require the least facilities, equipment and costs, be considered by family counselors to solve communication problems of families.

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Conflict of interest

The authors declare that there is no conflict of interest.

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Research Paper: The Prediction of Family Functions in Women with Premenstrual Syndrome based on Anger and Fatigue

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Abstract

Premenstrual syndrome is one of the commonest disorders among women with premenstrual period. The aim of the present study was to determine the relationship of anger and fatigue with family functions among women with premenstrual syndrome. The research sample consisted of 120 women who were selected among women with premenstrual syndrome in Ardabil, Iran. To collect the data, State-Trait Anger Expression Inventory-2, Fatigue Scale, Family Assessent Scale, and Daily Symptom Rating Form were used. The results showed that anger and fatigue are significantly related to family functions in women. The results of multiple regression showed that anger and fatigue explained 42 percent of variance family functions of women. Also results support the role of anger and fatigue on family functions. The results have important implications about prevention and counseling in women with premenstrual syndrome. The findings indicate that clinicians should use psychological trainings to cope with the consequences and symptoms of premenstrual syndrome.

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1. Introduction

The menstrual cycle is the most important sign of healthy function in the reproductive system of adult women, but this phenomenon is sometimes associated with disorders that cause problems for women in reproductive ages. These physical, mental and emotional symptoms, occurring periodically before menstruation in some women, is diagnosed as premenstrual syndrome (Duenas & Bermejo, 2011). Premenstrual syndrome (PMS) starts several days before menses (2-4 days) and remains for 2-4 days after the first day of menses (Kleinstauber et al., 2016). Population studies have shown variable prevalence of PMS, ranging from 54 to 90%, according to the criteria utilized in the society where the study was conducted (Lowder & Perry, 2004; Braverman, 2007). The prevalence of this syndrome in Iran is also different. Siahbazi, Hariri, Montazeri, MoghaddamBanaem, and Hajizadeh (2011) reported the prevalence of 33/3 % among Iranian women. In fact, it is difficult to determine prevalence because of variable symptoms, quantitative assessment and mental bias (Speroff, Marc & Fritz, 2005). The syndrome can begin at any phase of reproductive life but is more common reported by women who are between their late 20 and early 40 years and have at least one child, a family history of depression, a past history of postpartum depression or a mood disorder (Reiede et al, 2002).

Two prominent models, a bio-medical model and a cultural-feminist model, provide an explanation for Premenstrual Syndrome (PMS). The bio-medical explanations of PMS have concentrated on the possible hormonal changes, neurotransmitters, prostaglandins, drugs, lifestyle, dietary, and cultural-feminist basis for PMS (Henderson, 2000). Bloating and weight gain, breast swelling, mood swings, depression and anxiety, skin problems, changes in appetite, changes in interest in sex, headaches, backaches, cramps, inability to concentrate, loss of interest in usual activities, and confusion are possible signs and symptoms of PMS (Lopez, Kuptein, & Helmerhorst, 2009). In diagnosing PMS, APA (American Psychiatry Association) and NIH (National Institutes of Health) manuals are applied (Speroff et al., 2005).

Women with PMS experience physical symptoms such as breast tenderness, fluid retention leading to weight gain, fatigue, nausea, and constipation which can occur in the premenstrual period and also psychological symptoms such as anger, irritability, tenseness, anxiety, and restlessness as well as behavioral symptoms like depression, nervousness, and crying (Elnagar & Awed, 2015). Anger is one of the most severe and persistent symptoms of PMS (Walsh, Ismaili, Naheed, & O'Brien, 2015). So, anger is an intensifier factor in symptoms of PMS. Calamari & Pini (2003) indicated the significant relationship of anger introjections, anger intensity and tendency to anger with PMS intensity. 52.4% of PMS sufferers reported anger as common co-morbid symptoms (Silva, Gigante, Carret, & Fassa, 2006). In the premenstrual period, women frequently complain of anger and irritability (Raval, Panchal, Tiwari, Vala, & Bhatt, 2016). The results of Bostanci's study (2010) analyzed anger and anxiety levels in PMS-women, showed that they have consistently higher scores in anger, anger-in, anger-out and lower scores in items of anger control. In a study with teachers, the anger levels of

women with PMS were high but there was no significant relationship between PMS and anger control scores (Ozturk, Baykal & Drumus, 2015). Firoozi, Kafi, Salehi, & Shirmohammadi (2012) found a significant difference in mean score of depression, anxiety, aggression and interpersonal sensitivity between the 3rd and the 13th days of the cycle. Ducasse et al (2016) detected an impulsive-aggressive pattern of personality in women with PMS independently from the time of the menstrual cycle. Women with PMS had higher anger and lower anger control levels (Saglama & Basar, 2019).

In the PMS, complaint of fatigue can appear like clockwork nearly one to two weeks before the cycle commences, informing a woman of an impending menstruation. It is only a part of the body's normal response to the changes that occur during PMS. Fatigue as a main symptom in PMS prevents women attending in community. It often occurs in the last menstrual cycle days (Speroff et al., 2005). The results of some studies showed that 66.6% (Adiguzal, Taskin, & Danaci, 2007), 50.8% (KianiAsiabar et al., 2009) and 52.4% of PMS sufferers reported the fatigue as common co-morbid symptoms.

Halbreich et al (2003) found that the experience of symptoms of PMS can lead to arguments between family members which cause deterioration in relationship. These transient effects intensify conflict, instability, and isolation in the members of family. Psychological symptoms leads to women's work absences, reducing their function (Bornstein et al., 2003; Rapkin, 2005). All of these changes result in changes in the structure and function of the family and poor quality of life in women with PMS.

The personal and behavioral characteristics are affected by this syndrome. These changes in behavior have negative effect on their function (Speroff et al., 2005; Rizk, Mosallam, Alyan, & Nagelkerke, 2006).

Despite the abundance of clinical research on premenstrual symptoms, there is little comprehensive data available to explain the relationship of anger and fatigue to family functions in familial settings. The considerable prevalence of PMS and effects of anger and fatigue in this syndrome were other reasons to conduct research in order to promote women's productive and mental health through projecting the need for women's health services in our community. The purpose was to predict family functions in women with premenstrual syndrome based on anger and fatigue.

2. Method

According to the selection of at least 50 samples in correction studies (Delavar, 2021) and sample size in the previous similar studies, the research sample consisted of 120 women from 30 to 40 years with PMS who were selected among women referred to clinical centers by general practitioners and gynecologists in Ardebil city. During an initial period of 3 months, these women completed daily diaries of premenstrual symptoms. These diaries were used to select women with PMS, as defined by the specific criteria explained in what follows.

The doctors were asked not to refer women with major psychiatric disorder, other gynecological disorders, drug abuse, or any condition requiring psychotropic medication to the centers. The women

should be menstruating regularly, have a 6-month history of premenstrual symptoms occurring in the second half of the menstrual cycle and education levels from high school diploma to bachelor's degree. The following instruments were applied in the present research to collect the necessary data.

State-Trait Anger Expression Inventory-2 (STAEI-2): This scale with 57 items including three scales and nine subscales, was used. Participants responded to these items with four point scales. Spielberger (1999) reported the following reliability coefficients: state anger (0.93), trait anger (0.87), feeling anger (0.85), tendency for verbal anger expression (0.87), tendency for physical anger expression (0.88), anger temperament (0.83), anger reaction (0.70), anger expression-out (0.67), anger expression-in (0.80), anger control-in (0.91), and in anger control-out (0.83).

Fatigue Scale (FS): Chalder, Berelowitz and Hirsch (1993) designed this scale with fourteen items reporting cronbach's alpha and retest reliability coefficient of this scale in range from 0.82 to 0.85 and 0.74 to 0.81, respectively.

Family Assessment Scale (FAS): This scale was designed by Epstein, Baldwin and Bishop (1983) based on McMaster's model with forty-five items that measure familial structural and institutional characteristics. The Alpha internal parallelism in subscales has been reported to range from 0.72 to 0.92 by designers (Fischer & Corcoran, 2007). In the present research Cronbach's alpha was calculated as 0.78.

Daily Symptom Rating Form: This scale was designed by Rivlin and Martin (1999) with 18 items. Each item is rated on a scale of 0 "not at all" to 3 "extreme". In this research Cronbach's alpha was calculated as 0.82.

According to the DSM-IV, participants should, at least, have five out of eleven symptoms of PMS criteria with at least one being from the 4 first symptoms (core symptoms) and the symptoms should occur a week before menses and stop a few days after the onset of menses. The women traced for the above symptoms completed the study questionnaires administrated in the following order: The Multidimensional Anger Scale, Fatigue Scale, Family Assessment Scale and Daily Symptom Rating Form. Then the collected data were analyzed by the use of SPSS-16 software.

3. Results

The mean age of the sample and standard deviation were 28.60 and 5.68, respectively. Table 1 shows the means and standard deviations for all the variables traced in the women.

Table 1. Means and standard deviations of fatigue, anger and family functions in women

Variable	M	SD
Physical fatigue	16.44	5.31
Psychic fatigue	11.31	3.51
Fatigue	27.75	7.91
External anger	12.69	2.49
Internal anger	18.13	4.53
Anger	88.05	22.11
Family function	76.46	24.92
PMS symptoms	75.89	18.59

The Pearson correlation coefficients of fatigue and anger with family functions are presented in women with PMS (Table 2). As appears from the Table, anger and its dimensions were negatively correlated with family functions and a significant negative correlation was observed among the

fatigue, its dimensions and family function in women with PMS (P<0.001). Likewise, there are positive correlation among anger (and dimension of internal anger), fatigue (and its dimensions) and PMS symptoms.

Table 2. Pearson correlations of fatigue and anger with family function in women with PMS

Variable	1	2	3	4	5	6	7
1. Physical fatigue	1						
2. Psychic fatigue	0.593**	1					
3. Fatigue	0.934**	0.842**	1				
4. External anger	0.186	0.198	0.212	1			
5. Internal anger	0.432**	0.380**	0.459**	0.238	1		
6. Anger	0.578**	0.300*	0.521**	0.499**	0.673**	1	
7. PMS symptoms	0.477**	0.707**	0.634**	0.209	0.525**	0.434**	1
8. Family function	-0.48**	-0.283**	-0.448**	-0.378**	-0.488**	-0.849**	-0.413**

*p < .05 **p < .001

Table 3 shows two stepwise multiple regression analyses, including anger and fatigue, were used to determine which variables best predict family functions and PMS symptoms in women with PMS. Significant models were produced for them, adjusted $R^2 = 0.721$, F (2, 58) F= 74.872, $p < 0.000$ in family functions index and $R^2 = 0.417$, F (2, 58) = 20.705, $p < 0.000$ in PMS symptoms index.

Table 3. Stepwise multiple regression of anger, fatigue for predictor of family function and PMS symptoms in women with PMS

	RS	F(sig)	B	SE	*B*	t(sig)
Predictors of family function index						
Fatigue	0.200	14.789	-0.23	0.256	-0.007	-0.90(<0.928)
Anger	0.721	74.872	-0.953	0.092	-0.845	-10.397(<0.000)
Predictors of PMS symptom index						
Fatigue	0.402	39.637	1.315	0.276	0.560	4.765(<0.000)
Anger	0.417	20.705	0.120	0.099	0.142	1.209(<0.231)

As seen in Table 4, about 39% of family function variance is explained through the variables of internal anger, physical fatigue and external anger. Also, about 0.58 of PMS symptoms variance is accounted for the variables of psychic fatigue and internal anger. As a result of the t–test, the impact quotients of internal anger (B=–1.627), physical fatigue (B=–1.436), and external anger (B=–2.509) in family function and the impact quotients of psychic fatigue (B= 3.141) and internal anger (B= 1.226) in PMS symptoms indicate that they can meaningfully predict the family functions and PMS symptoms variance of women with PMS.

Table 4. Stepwise multiple regression for predictor of family functions and syndrome in women with PMS

	RS	F(sig)	B	SE	*B*	t(sig)
Predictors of Family function index						
Internal anger	0.238	18.447	-1.627	0.643	-0.296	-2.531(<0.014)
Physical fatigue	0.327	14.119	-1.436	0.543	-0.306	-2.646(<0.011)
External anger	0.386	11.963	-2.509	1.072	-0.251	-2.339(<0.023)
Predictors of PMS symptom index						
Psychic fatigue	0.500	59.049	3.141	0.489	0.594	6.426(<0.000)
Internal anger	0.577	39.489	1.226	0.379	0.299	3.234(<0.002)

4. Discussion

This study examined the relationship of anger and fatigue to family functions in women with premenstrual syndrome. The results revealed a relationship among anger, its dimensions and family functions in women with premenstrual syndrome. These results laid in findings of Saglam and Basar (2019), SoydaAkyol, KarakayaArısoy and Caykoylu (2013), Calcamari and Pini (2003), Reyes, Meinnger, Liehr, chan, and Muller (2003), Christian, (2000), Yarcheski, Mahon, and Yarcheski (2002). The results demonstrated that anger and its dimensions reported low family function. So anger was a negative predictor of family functions for women with PMS, suggesting that women who experience high anger face the problems in interpersonal relations and that these flaws negatively affect family functions such as problem-solving, communication, affective responsiveness, emotional support, behavior control and general performance. Premenstrual impairment may be more severe at home (e.g., influencing marital relationships and homemaking, as compared to social and out of home occupational defects (Saglam & Basar, 2019).

Also, there was a relationship between general anger and internal anger with PMS symptoms. The results are consistent with the previous research findings (Yarcheski et al., 2002; Christine, 2000; Calamari & Pini, 2003). There is an impulsive-aggressive pattern of personality in women with PMS independently from the time of e menstrual cycle. Trait anger remained associated with PMS independently of every other personality trait (Ducasse et al, 2016). Bostanci (2010), analyzing the anger and anxiety levels of health in PMS-women found that the women consistently had higher scores in anger, anger-in, anger-out and lower scores in terms of anger control.

The further results showed a relationship between general fatigue and physical fatigue with family function in women with PMS. This result is consistent with the prior research findings (e.g., Speroff et al., 2005; Daugherty, 1998; Mortola, Grton, Beck, & Yen, 1990). The findings indicated that fatigue in PMS sufferers leads to poor family function because fatigue is associated with asthenia mental sensation, lack of energy and exhaustion. These flaws disable PMS sufferers in physical and psychic health.

In addition, a relationship of general fatigue and psychic fatigue to PMS symptoms was observed. This finding is in harmony with the findings of Mortola et al.,

1990; Afra, Mahmoud, Abu Salem, and Mohamed (2020). They reported the fatigue one of the most common symptoms in PMS. Gupta, Lahan and Bansal (2012) concluded that PMS-women had poorer sleep quality than women without PMS. Therefore, they experience more fatigue and tiredness during this period time.

5. Conclusion

This study detected a significant relationship of anger and fatigue to family functions in women with premenstrual syndrome. The findings showed that clinicians should use psychological trainings to cope with the consequences and symptoms of premenstrual syndrome. Future cohort studies investigating large populations, assumption of group without PMS, controlling PMS precedent and utilizing other measures beside self- report are recommended.

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Conflict of interest

The authors declare that there is no conflict of interest.

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Research Paper: The Role of Health Hardiness and Anxiety on Immune System and Quality of Life Patients with HIV

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Abstract

The pattern of change in HIV from fatal diseases to chronic diseases due to improvement of treatment made a new challenge for diagnosis and care for the needs of people who live with HIV. This study reviews the role of health hardiness and anxiety on the immune system and quality of life in HIV patients. 125 men with HIV infected through injection participated in this study. They were asked to complete the revised health hardiness inventory, Spielberg state-trait anxiety inventory, and WHOQOL-brief. Data from four times of cd4 experiment with three-month intervals was obtained from the dossier. Data analysis was conducted using Pearson correlation, dependent t-test, multiple regression, and logistic regression. Results of this study show no statistically significant relationship between health hardiness, anxiety, and the immune system. The regression analysis indicates that the total score of quality of life with health hardiness and anxiety was statistically significant (0.0001). Subscales of perceived health (B=0.302), state anxiety (B=-0.305) and trait anxiety (B=-0.449) in equation relative to prediction quality of life were statistically significant (0.0001). Health hardiness and anxiety are not associated with a lowered immune system. The patients with higher anxiety had lower quality of life and those with higher health hardiness had higher quality of life.

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1. Introduction

In the mid-1990s, the pattern of HIV/AIDS changed from a deadly disease to a chronic disease because of advances in treatment that posed a new challenge in identifying and addressing the needs of people living with HIV/AIDS for long periods (Vetter, 2009). QOL drew the attention from regulatory authorities and health providers as an important outcome to evaluate the effectiveness of HIV treatment (Thu Vu, Tran, Hoang, & Hall, 2020). Over the last decade, the pattern of control and management of symptoms to improve the overall quality of life, especially in deadly diseases such as AIDS and cancer has changed significantly (Chandra, Deepthivarma, Jairma, & Thomas, 2003). Quality of life has been considered as an important measure of health, the improvement of which is an important goal (Vetter, 2009). Poor QOL is associated with a lower immune response, non-adherence, poor mental health, and greater disease severity (Thu Vu et al., 2020). Improving the quality of life of people living with HIV is an important area of therapeutic interventions, so that patients may abandon therapies that increase their lifespan. People prefer to have a shorter life but with an optimal quality of life (Zimpel, & Fleck, 2007). The important point is to improve the quality of life, so the factors that affect the quality of life must be identified (Deribew et al., 2009). Among these factors are health hardiness and anxiety. Kobasa (1979) introduces hardiness as a set of personality traits that help a person stay healthy in the face of stressful events. Pollack (1990) developed the concept of health hardiness to be used specifically for people with chronic illnesses. He hypothesized that health hardiness is a motivating factor in the physiological and psychological adjustment of chronic patients. Several studies have concluded that hardiness and quality of life are related (Asadi Sadeghi Azar, Vasudeva, & Abdollahi, 2006, Whetsell, 2006, Sttine, Chapman, Kobau, Balluz, & Mokdad, 2004).

Cross-sectional and longitudinal studies have suggested that anxiety and depression are related to a reduced quality of life in samples with and without specific diseases (Hohls, Konig, Quirke, Hohls, & Hajek, 2019). People who are anxious in addition to physical illnesses are four times more likely to feel helpless than those without anxiety (Sttine et al., 2004). Researchers have concluded that anxiety has a negative impact on patients' quality of life (Saevarsdottir, Fridriksdottir, & Gunnarsdottir, 2010, Alacaciogla, et al., 2010, Brenes, 2007, Khayam Nekoueiz, Yoasefi, Khayam Nekouiz, & Sadeghi, 2009) Studies have shown that some HIV-infected people show no symptoms and live longer than others. These studies show that psychological states and traits play a role in most of their lifetime (Locke, 1987). There is considerable evidence that psychosocial factors play an important role in the progression of HIV infection, mortality, and morbidity (Rendina, Weaver, & Millar, 2019). As a result, psychosocial factors that affect immune-endocrine interactions are associated with HIV/AIDS. Accumulating data from human studies suggest that a range of psychological factors may play protective roles against the deleterious effects of stressful events (Dantzer, Cohen, Russo, & Dinan, 2018). Here we discuss two factors that have received sufficient attention to address their potential effect on

the immune system. These factors include health hardiness and anxiety.

Although stress weakens the immune system in the long run and exposes the individual to various diseases, there are certain moderators known as stress-resistant resources that reduce the negative effects of stress on the body. Research has shown that people with low psychological hardiness will be afflicted with diseases in the long run, while people with high levels of hardiness are immune to the negative effects of stress (Seiler, Fagundes, & Christian, 2019). The individuals who scored lower on hardiness measures had a greater tendency to become ill when experiencing high levels of stress compared to hardy individuals. In other words, the findings suggest that hardiness is better at buffering the effects of stress on health (Kowalski, & Schermer, 2018). The study reported a positive relationship between the commitment subscale of hardiness and CD4 counts of HIV patients (Pandey, Srivastava, 2015). Studies show that psychological hardiness protects against the ill effects of stress on health and that hardiness operates as a moderator or buffer of stress (Bartone, Eid, & Hystad, 2016). Likewise, the results of studies (Dolbier, Cock, & Leiferman, 2001, Leaudoin, 1992; Bahrami, mohamadirizi, & Mohamadirizi, 2017) showed a significant relationship between hardiness and the immune system and diseases. However, the results of studies by Nickolas, and Webster (1993) and Lang (2001) showed no significant relationship between them.

Long-term negative emotions may reduce the immune function of people and destroy the balance of their normal physiological mechanisms (Li, Wang, Xue, Zhao, & Zhu, 2020). Stressful life events and the negative emotions they generate can dysregulate the immune response by disturbing the sensitive interplay among these systems (Seiler et al., 2019). Psychological stress has been implicated in altered immune functioning in many diseases. Altered immune function can lead to exacerbated symptoms of both physical and psychological illnesses (Morey, Bogger, Scott, & Segerstroww, 2015). Studies have shown that although anxiety may be associated with immune changes, the analysis of some studies have been contradictory (Arranze, Guayerbas, & Dela Fonte, 2007; Lutgendrof, et al., 2008, Thornton, Andersen, & Crespin, 2007; Antoni et al., 2000; Diego et al., 2001; Kawamura, Kim, & Asukai, 2001). However, studies assessing the effect of psychological variables on the patients with HIV are lacking in IRAN; therefore, the purpose of this study was to assess the effect of anxiety and health hardiness on the immune system and quality of life in the patients with HIV.

2. Method

The 125 HIV-infected men who were referred to the Behavioral Diseases Counseling Center of Imam Khomeini Hospital in Tehran and who were tested positive for HIV by Western blot were included in the study. These patients became infected with HIV through co-injection with a contaminated syringe. Their CD4 levels were above 200. Reviewing the medical record showed that they had neither a physical problem (other than HIV infection), nor a mental illness, who took no medication. The participants were informed that the aim of the study was to investigate the role of psychosocial

variables on their immune system and quality of life and that they would not be named and were included in the study if they gave their consent. First, the files of the patients referred to the Behavioral Diseases Counseling Center of Imam Khomeini Hospital were reviewed. If the patients were eligible, first the demographic characteristics of the patients including age, marital status, employment status, level of education, spouse infection (if married) were recorded. Then, the data about the research variables was obtained using the questionnaires. Then, in order to obtain information about the immune system, four CD4 tests of the patients with three-month intervals were recorded from their files. The aim of this cross-sectional study was to determine whether anxiety plays a role in lowering the immune system and reducing the quality of life of HIV-infected patients. In addition, what is the role of health hardiness in increasing the immune system and improving the quality of life of these patients? Using multivariate regression, the relationship between independent variables (health hardiness and anxiety) and quality of life was examined, and using logistic regression, the relationship between independent variables (health hardiness and anxiety) and the immune system was investigated.

The data required for this study were collected using three questionnaires.

Health Hardiness Questionnaire (RHHI-24): This questionnaire is a self-report questionnaire that has 24 items and is prepared by Gibhardt, Vanderduff, and Powell (Gebhardet, Vander Doef, & Paul, 2001). Each item of the questionnaire is in the form of a statement that refers to a person's health status and has a 5-point Likert scale from "strongly agree" to "strongly disagree." Health hardiness has four subscales: health value, internal health locus of control, external health locus of control, and perceived health competence. Cronbach's alpha was 0.83, 0.89, and 0.82 for the sample groups of students, normal people, and chronic patients, respectively. And the correlation coefficient obtained in the retest is 0.91 and for the subscales ranges from 0.74 to 0.91 (Torshabi, 2007).

Spielberger State-Trait Anxiety Test (STAS-Y): The first form of the questionnaire was developed in 1970 by Spielberger et al., which is known as Form X. Form X was revised in 1983 and was renamed Form Y. The revised form has 40 items. The scores range from 20 to 80. The higher a person's score, the higher his level of anxiety. In Form X, the retest coefficient on the Trait Anxiety Scale (0.84 for men and 0.76 for women) was higher than the state anxiety (0.33 for men and 0.16 for women). Internal consistency in the state anxiety scale was between 0.83 and 0.92 and in the trait anxiety scale range from 0.86 to 0.92. In form Y, the mean alpha coefficients in the state and trait anxiety scales were 0.90 and 0.93. Retest coefficients in trait anxiety ranged from 0.73 to 0.86 and those in state anxiety ranged from 0.16 to 0.62 (Spielberger, 1983). Dehdari et al. (2007) obtained an alpha coefficient of 0.90 in their study.

Quality of Life Short Form Scale (WHOQOL-BRIEF): The Global Health Quality of Life Short Scale was developed after integrating some dimensions and selecting a number of items from the World Health Organization Quality of Life Scale that justified most of the variance (Skevington, Lotfy, & O,Connel, 2004). This questionnaire includes two general health and quality of life items and one item

for each of the 24 WOQOL-BRIEF subsets and has a total of four main dimensions of physical health (four items), mental health (six items), and social relations (three items). And environmental health (eight items) (World Health Organization). Studies by Skevington, Lotfy, and O,Connel (2004), Zhao et al. (2006) have shown that this scale has sufficient reliability and validity. In Rafie, Sharifian, Rafiey, Behnampour, and Forozesh (2014) study, the internal consistency for the global score was 0.934. T-test reliability showed good results for global score (Spearman's correlation=0.89, ICC= 0.887). The concomitant validity and construct validity revealed a significant correlation between QLI with SF-36 questionnaire and Vaux questionnaire.

3. Results

The descriptive characteristics of the research variables are shown in Table 1.

Table 1. Descriptive characteristics of research variables

Scales	M	SD	Scales	Mean	SD
Health hardiness	67.05	13.33	Trait anxiety	44.73	12.79
Health value	14.25	2.91	Quality of life	76.11	15.67
External health locus of control	16.52	5.69	Physical health	29.94	5.27
Internal health locus of control	18.05	4.03	Mental health	19.72	4.72
Perceived health	17.70	4.61	Social relation	7.60	2.53
State anxiety	43.09	15.46	Environmental health	23.84	6.07

As shown in Table 1, in the hardiness variable, the internal health locus of control had the highest average. Also, in the quality of life, physical health has the highest average. The mean of trait anxiety is higher than state anxiety.

In order to investigate the role of predictor variables on the quality of life of these patients, first, the correlation between the variables was obtained. Table 2 shows the results of the correlations.

Table 2. Correlation coefficients of research variables

Variable	Quality of life
Health hardiness	0.500**
State anxiety	-0.599**
Trait anxiety	-0.636**

**P<0.01

The results of these correlations indicate that health hardiness has a significant positive correlation with the quality of life. Anxiety has a significant negative correlation with the quality of life.

A multivariate regression test was used to investigate the role of health hardiness and anxiety on quality of life in HIV-infected people. Table 3 shows the multivariate regression results of quality-of-life score in terms of predictor variables.

Table3.Results of quality-of-life regression analysis test based on predictor variable

Source of variance	SS		Df	SM	F	Sig	r^2 adg
	13593.710		3	4531.237	32.494	0.0001	0.43
Scale	**Beta**	**T**	**Sig**	**Scale**	**Beta**	**t**	**Sig**
Health hardiness	0.172	2.038	0.044	Health value	-0.024	-0.297	0.767
External health locus of control	0.198	2.402	0.017	State anxiety	-0.305	-3.716	0.0001
Internal health locus of control	0.023	0.246	0.806	Trait anxiety	-0.449	-5.463	0.0001
Perceived health	0.302	3.740	0.0001				

As this table shows, a significant model is obtained using simultaneous regression. This model accounts for 43% of the variance in quality of life. Table 3 also shows the coefficients of the quality-of-life score prediction equation in terms of predictor variables. According to this table, the subscales of perceived health, state anxiety, and trait anxiety were significant in the equation related to predicting quality of life.

Paired t-test and logistic regression were used to investigate the relationship between independent variables and the immune system. The results of the paired t-test are shown in Table 4.

Table4. Paired t-test results to compare four CD4 tests

Paired variables	T	df	Sig
CD41 , CD42	-3.483	124	0.001
CD41 ,CD43	-3.219	123	0.002
CD41 , CD44	-2.310	121	0.023
CD42 , CD43	-0.103	123	0.918
CD42 , CD44	-0.609	121	0.544
CD43, CD44	1.03	121	0.303

To compare the average of four CD4 tests, t-test with Ben Foroni correction was used. To avoid the first type of error, the four CD4 tests are to be compared. The significant differences less than 0.0125 is considered. The results of Table 4 show that there is a significant difference between the first and second CD4 test period and the first and third CD4 test period. But there is no significant difference between the first and fourth, second and third, second, fourth, third, and fourth CD4 test period. Then, each CD4 test period was divided into two classes. The basis of division is the use of standard scores and normative distributions. According to the statistical model, the cut-off point +_1/64 in single-domain distributions and +_1/96 for dual-

domain distributions reflect critical boundaries. These points can then be used in the analysis and grouping of recorded CD4. According to this method, subjects with lower than average CD4 were divided into a low-boundary group and those with a higher CD4 were classified as a high-boundary group. Then, using logistic regression, the relationship between research variables and the two groups in each experimental period was analyzed. Table 5 shows logistic regression results and coefficients of independent variables in four CD4 test periods.

Table5. Logistic regression results and coefficients of independent variables in four CD4 test periods

Independent variable	B	Sd	Wald	df	Sig	Exp (B)
(CD_{41}) Health hardiness	0.000	0.015	0.001	1	0.978	1.000
(CD_{42})Health hardiness	0.021	0.016	1.842	1	0.175	1.021
(CD_{43})Health hardiness	0.001	0.015	0.001	1	0.969	1.001
(CD_{44})Health hardiness	0.011	0.015	0.546	1	0.460	1.011
(CD_{41}) State anxiety	-0.016	0.013	1.521	1	0.217	0.984
(CD_{42})State anxiety	-0.024	0.014	3.051	1	0.081	0.977
(CD_{43})State anxiety	0.009	0.013	0.575	1	0.448	1.010
(CD_{44})State anxiety	-0.009	0.013	0.469	1	0.493	0.991
(CD_{41}) Trait anxiety	-0.005	0.015	0.098	1	0.754	0.995
(CD_{42})Trait anxiety	-0.019	0.016	1.459	1	0.227	0.981
(CD_{43})Trait anxiety	0.021	0.015	1.900	1	0.168	1.021
(CD_{44})Trait anxiety	0.004	0.016	0.059	1	0.808	1.004

According to Table 5, there is no relationship between predictor variables and test periods.

4. Discussion

The present study was designed to investigate the predictive effect of health hardiness and anxiety on the immune system and the relationship between them and quality of life in HIV patients. The findings of this study do not support the hypothesis that health hardiness has a predictive effect on elevating the immune system of HIV-infected patients. This finding is consistent with the results of studies (Nickolas, Webster, 1993; Long, 2001). However, it is not consistent with the results of studies Leaudoin (1992) and Bahrami, and Mohammadrizi (2017). This can be explained by the following probabilities: In this study, four-period CD4s were measured at approximately three-month intervals to measure immune changes. Because CD4 changes are slow and take longer to make significant changes. With this description, it seems that changes in the immune system may take longer to make more effective measurements. In addition to CD4 measurements, other measures, such as viral load, should be used to assess the effect of health hardiness on the immune system. The viral load will probably show the effects of psychological variables on the immune system better than CD4. The same argument can also be used to explain the lack of relationship between anxiety and the immune system.

The results of this study along with Farber, Schwartz, Schaper, Moonen, and Mc Daniel (2000) showed that health hardiness is associated with increased quality of life in people with HIV. As shown in Table 3, the Perceived Health Competency subscale positively accounts for 30% of the variance in quality of life. Perceived health competence refers to a specific range of self-efficacy constructs (Walston, 1992; cited in Gebhardet et al., 2001). There is a positive relationship between self-efficacy and quality of life. People with high self-efficacy use coping skills to manipulate stressful situations. They experience less stress, which leads to better physical and mental health. Because of their confidence in their abilities to face challenges, they have a greater sense of control, which leads to better well-being (Asadi Sadeghi Azar et al., 2006). People with high self-efficacy have the competence to face challenges to achieve a goal and succeed. The positive experiences and positive feedback that these people gain increase their self-esteem (Bandura, 1997; quoted by Asadi Sadeghi Azar et al., 2006). Self-esteem is the best predictor of life satisfaction (Levinsohn, Render, and Sili, 1991; quoted by Asadi Sadeghi Azar et al., 2006). And life satisfaction also ensures better mental and physical health, which are important components of quality of life (Asadi Sadeghi Azar et al., 2006). Perceived health is a subjective measure that is more closely related to the use of health care than any other objective measure of health. Poorly perceived health is associated with poor health outcomes (Buseh, Kelber, Stevense, Buseh, & Park, 2008). The low physical health of HIV / AIDS patients is associated with lower quality of life (Mak et al., 2007).

The results of this study is in harmony with the studies by Saevarsdottir et al., (2010), Alacaciogla et al., (2010), Brenes (2007), Khayam Nekoueiz, Yoasefi, Khayam Nekouiz, and Sadeghi (2009) showing that there is a relationship between anxiety and decreased quality of life. Physical symptoms of anxiety include physical stress, arousal of the autonomic nervous system, and other physical complaints (Little et al., 1987; cited in Brown, 2002). Anxiety is associated with negative consequences including decreased work productivity, impaired social, family, and occupational function and physical disability (Brenes, 2007). The low physical health of HIV-infected patients is associated with lower quality of life (Mak et al., 2007). Anxiety has a mediating effect on mental perception, psychological dimensions, social functioning, mental health, and energy quality of life (Renacoba-Puenta, Fernandez-De-Las-Penas, Gonzalez-Gutierrez, Miangolarra-Page, & Pareja, 2008). Behaviorally, anxious and depressed patients neglect their self-care and fail to follow the prescribed medications Moreover, there is a reciprocal relationship between negative emotions (anxiety and depression) and QoL (Aburuz, 2018). Despite the positive findings of the study, several limitations should be mentioned. Since the present study is a cross-sectional study, it is not possible to examine causal relationships, and other variables might have affected the observed relationship. Due to the low level of literacy of patients, the questionnaires were read to the patients, which may have affected the subjects' answers and caused bias in the answers. Thus, future studies may also be conducted in the form of systematic reviews and meta-analyses, for instance, on how health hardiness can be used as a

structure to investigate the efficacy of HIV interventions or treatments.

5. Conclusions

The results of this study showed that although health hardiness and anxiety do not have a predictive effect on the immune system of these patients, they seem to improve the quality of life of these patients.

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Conflict of interest

The author declares that there is no conflict of interest.

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Research Paper: Effectiveness of Acceptance and Commitment Therapy on Improving Symptoms and Increasing Quality of Life in Patients with Obsessive-Compulsive Disorder in Interacting with OCD Family History

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Abstract

The present study aimed to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on improving symptoms and increasing quality of life among the patients with obsessive-compulsive disorder (OCD) in interacting with OCD Family History: This is a quasi-experimental and pretest-posttest study with control and follow-up groups. The study population entirely consisted of over-18-years of age OCD patients referred to private consultation centers, and rural and urban healthcare centers in Rasht city during 2014. The sample selected through purposive sampling consisted of 60 OCD patients who were randomly included in two experimental (ACT with and without OCD Family History) and two control (control with and without OCD Family History) groups. The experimental groups received eight ACT 45-minute sessions of Yale-Brown Obsessive Compulsive Scale was used to determine the severity of OCD. In addition, the brief version of WHO Quality of Life Scale was used to measure life quality and the clinical interview was used to investigate OCD family history. Multivariate analysis of variance test with repeated measures was used to examine the differences in pretest-posttest and follow-up scores. The results show that ACT caused a significant decrease in OCD symptoms and a significant increase in patients' quality of life while OCD family history had no impact on the effectiveness of ACT. Therefore, all patients can benefit from this therapy regardless of their OCD Family History.

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1. Introduction

Obsession is continuous and recurrent thoughts, intense desires and images which one intentionally and unintentionally experiences. People often attempt to ignore or stop their obsessive thoughts or neutralize them through thinking about other subjects or performing neutralizing actions. The thoughts or actions one uses to neutralize obsession are called compulsion; a repeated behavior or action which should be performed with obligatory rituals such that one feels obligated to do. In obsessive-compulsive disorder (OCD), people experience compulsions and obsessions with such an intensity that sometimes make daily activities extremely difficult (Halgin, & Whitborne, 2013). The 12-month prevalence of OCD at the international level is 11-1.8%. This disease is considered as the fourth most common disorder in the U.S.

World Health Organization reported that, as the tenth disabling disorder, OCD has intense detrimental effects on social function and quality of life (Fisher, & Wells, 2008). WHO defines Quality of Life as individuals' perception of their position in life in the context of the culture and value systems related to their goals, expectations, standards and concerns. It is a broad-ranging concept influenced in a complex way https://psycnet.apa.org/record/1998-07751-011 by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment (World Health Organization, 1996). The youth are mainly affected by this disorder as they have often high energy levels in all aspects of life. In addition, high comorbidity of OCD with other psychological disorders significantly deteriorates the quality of life and has consequential outcomes on social and occupational aspects of patients' life (Srivastava, & Bhatia, 2008). Since OCD is a chronic disorder that initiates in early life, one's whole life is affected by its several consequences. Further, OCD influences patients' financial status. Even, regardless of the costs such patients and their families should pay, this disorder still affects the patients' occupational situation as it has negative effects on one's work-life effectiveness and causes a financial burden on the family. The patients suffering from OCD have a higher unemployment rate, lower mean income, less achievement and more dependence on financial assistance and maintenance allowance benefits.

According to the results of international surveys on the prevalence of psychological disorders, only 48% of OCD patients had a personal income, 16% were unemployed and 36% were financially inactive. Furthermore, 3% of non-hospitalized OCD patients never had a job, indicating the possible early beginning of this disorder (Foster, Meltez, Gill, & Hinds, 1996).

Although OCD had been considered as a therapy-resistant problem requiring lifetime therapy, experimental research works in the recent decades resulted in detecting and introducing effective behavioral therapy methods known as Exposure and Response Prevention Therapy, cognitive and behavioral therapies (Mokmeli, Neshatdoost, & Abedi, 2006). The effectiveness of this therapy ranges 60-85% (Foa, Franklin, Kozak, 1998) though this method has its limitations. In addition to 15-40% of unresponsiveness to exposure and response prevention therapy, almost 25% of patients reject the exposure and 3-12% leave the

therapy prematurely (Salkovskis, & Westbrook, 1989). Furthermore, low motivation and insufficient therapeutic compliance of patients reduce therapeutic benefits, leading to low satisfaction from the therapy. Indeed, exposure is a difficult therapy for obsession as the client is asked to face his/her greatest fear without any avoidance behavior, leaving the anxiety to diminish by itself. This is the main cause of the high failure rate and rejection by patients. Cognitive theories of OCD emerged in the response of such limitations. Unfortunately, despite consensus related to the involvement of cognitive dimensions in OCD, cognitive interventions either individually or collectively did not lead to better results (Abramowitz, 1997).

Recently, alternative theories have been proposed for this approach by which clinical progress requires the direct change of thought contents, emotions or body symptoms. Such theories, known as the third wave of behavioral therapy, target the functions of cognitions and emotions instead of their transformation, frequency and situational sensitivity such as Dialectical Behavior Therapy, Integrative Behavioral Couple Therapy, Mindfulness-Based Cognitive Therapy and ACT (Heyes, & Strosahl, 2010). These therapies focus on acceptance instead of challenging beliefs. Besides, such therapies are mainly focused on symptom tolerance rather than its reduction (Heyes, Masuda, Bissett, Luoma & Guerrero, 2004). Among these therapies, acceptance and commitment therapy (ACT) has attracted much clinical attention during the past few years. ACT originates from a philosophical theory called functional contextualism (Heyes, Strosahl, & Wilson, 1999) which is based on a research program about language and cognition called rational frame theory (Heyes, Barness-Holmes, & Roche, 2001). Functional contextualism evaluates behavior in its context and assesses its functions. Rational frame theory shows how natural language processes significantly changes human experiences. Such processes result in negatively evaluating almost all aspects of human experience (Flaxman, Blackledge, & Bond, 2011/2013). ACT focuses on increasing behavioral effectiveness in the presence of intrusive emotions and thoughts rather than direct change and reduction in their intensity and frequency (Heyes et al,. 1999). However, the ACT therapists' efforts may ironically lead to the final decrease of psychological agitation, while they directly do not try to change the patient's confusing thoughts or decrease their unpleasant emotions. Although such psychological interventions do not improve patients' emotions and thoughts but there is a research-based logic beyond it. ACT aims to increase psychological flexibility, which is the ability to contact the present moment in life and to bring about changes in a way to persist in behaviors that are appropriate for situations in line with personal values. Indeed, ACT helps people have a more rewarding life despite unpleasant thoughts, emotions and feelings. ACT has six core processes that lead to psychological flexibility (Hayes, Luoma, Bond, Masuda, & Lilis, 2006). These six processes are: 1) Acceptance, in which the act does not include craving for disturbing emotions and experiences and merely tolerating them, but it means the desire to experience unpleasant events - i.e., internal events that act in the direction of behavior consistent with values. Acceptance of the opposite pole is therefore experiential avoidance - one of the main elements of emotional inflexibility - 2) Cognitive defusion, which means

breaking the rules of language in ways that cause problematic words to lose much or all of their meaning; That is, thoughts should be just words or thoughts, not real things. 3) Self as a context, which implies that one should not be considered equal to thoughts, feelings and bodily senses, but they should be considered equal to a person who acquires or realizes these experiences, 4) Contact with the present moment, which means acting with full awareness of what is happening in the present, 5) Values, which are expressions that indicate what situations a person always desires to experience in his life and 6) Committed action that at its most fundamental level is the implementation of behavior that is truly in line with the individual's values which do not promise nor agree to implement (Flaxman et al,. 2011/2013).

Conversely, genetics has recently been proposed to be the cause of OCD. Although there is no consensus among researches on certain effective gene or genes responsible for OCD, plenty of evidence is available indicating that genetic factors will finally be identified as the main mediator at least in some certain symptoms of OCD (Steketee, Piggott, 2006/2020). It was found that such a disorder is familial (e.g. Grados, Walkup, & Walford, 2003, Hanna, Himle, Curtis, & Gillespie, 2005). In this study, OCD family history variable is used to investigate the genetic factors.

Therefore, the present study aims to investigate the effectiveness of ACT on managing OCD and improving patients' quality of life. Since inheritance has been proposed as a risk factor of developing, ACT is assessed in interaction with OCD family history to answer the question whether OCD family history could be a significant variable in the effectiveness of therapy.

2. Method

This was a quasi-experimental and pretest-posttest study with control and two-month - follow-up groups. The research population entirely consisted of over-18-years of age obsessive patients referred to private counseling centers, and rural and urban healthcare centers in Rasht City during 2014. The research sample included 60 OCD patients selected through purposive sampling method among visitors who gave their consent to the study conditions and were randomly included in experimental and control groups. The inclusion criteria were: 1) over-18-years-of-age; 2) not having comorbid psychological disorders like depression, bipolar, schizophrenia, drug abuse etc.; 3) not taking medication during therapy; 4) earning a score of 16 or higher in Yale-Brown Obsessive-Compulsive Scale (YBOCS). The researcher conducted clinical interviews with OCD patients referred to these centers based on DSM-5 criteria to confirm the diagnosis of OCD and comorbidity of other psychiatric disorders. Additionally, the presence or non-presence of OCD family history was determined through such interviews. Yale-Brown Obsessive-Compulsive Scale and a brief version of the World Health Organization Quality of Life Scale were used to measure life quality on the assessed subjects. After primary assessment, the subjects were randomly divided into 4 groups (n=15) (the experimental group for ACT with and without OCD family history, control group with and without OCD family history). Each treatment group received eight 45-

minute sessions once a week while control groups did not receive any therapy. After completing remedial sessions, Yale-Brown Obsessive Compulsive Scale and brief version of the World Health Organization Quality of Life Scale were performed two months later as follow-upstage. Multivariate analysis of variance test was used to examine the differences in pre-test scores in groups and multivariate analysis of variance test with repeated measures was used to examine the differences in pre-test, post-test and follow-up scores. The data required for this study were collected using three instruments.

DSM-5 criteria-based clinical interview: The researcher conducted clinical interviews based on DSM-5 criteria to confirm OCD and the lack of comorbid psychological disorders like depression, bipolar, schizophrenia, drug abuse, etc. In addition, the presence or non-presence of OCD family history was determined through this clinical interview.

Yale-Brown Obsessive-Compulsive Scale (YBOCS): this scale was first introduced in 1989 by Goodman et al 10 items (5 items focused on mental obsession and the other ones focused on compulsive obsessions). The highest score on this scale is 40. The assessors" reliability, internal consistency coefficient and test-retest reliability coefficient within 2 weeks have been reported as r=0.98 r=0.89, and r=0.84, respectively in Iran. Its discriminant validity with depression questionnaire and Hamilton's depression rating scale were obtained as r=0.64 and r=0.59, respectively (Dadfar, Bolhari, Dadfar, & Bayanzadeh, 2001). Dadfar (1998) reported its divergent validity with Maudsley's obsessive - compulsive questionnaire as 0.78.

World Health Organization's Quality of Life Scale-Brief Version (WHO-BRIEF): Several questionnaires have been developed to assess the quality of life but WHO's has attracted more attention due to its unique characteristics. The general instrument for measuring WHO's Quality of Life was designed as WHOQOL-100 and WHOQOL-BRIEF after combining some areas and removal of some questions to make a 100-item scale. The results indicated an acceptable compliance in different studies. WHOQOL-BRIEF form was selected for its fewer numbers of items and ease of use. This questionnaire measures four areas i.e. physical health, mental health, social relationships, and environmental health with 24 items. The first two items do not belong to any area and measure general health status and quality of life. Therefore, this questionnaire has 26 items that were rated on a scale of 1-5 (Nejat, Montazeri, Holakoei, Mohammad, & Majdzadeh, 2006). The reliability of the scale for physical health, mental health, social relationships, and environmental health was reported as 0.77, 0.77, 0.75, and 0.84, respectively. In Nejat et al. (2006)'s study, the discriminant validity of this questionnaire was investigated through the difference between healthy and patient people which was confirmed through the significance of group coefficient and control of potential confounding factors in different subscales through linear regression.

In the present study, ACT was implemented based on the book "Acceptance and Commitment Therapy for Obsessive-Compulsive Disorder: Treatment Manual" (Twohing, 2004) in 8 sessions for 45 minute once a week. Home assignments were given to patients at the

end of each session and all sessions (except the first session) initiates with performance evaluation, observing reactions to the previous session, and home assignments. In Table 1 a summary of ACT sessions is presented.

Table 1. Summary of ACT sessions

Sessions	Contents of sessions
Session 1	Making a good relationship with the visitor and gaining information related to obsession history; evaluating the history in which the symptoms of obsession occur and discussing thought differences and obsessive actions
Session 2	Asking the patient to draw a picture of him/her and specify the locus of thoughts and its obsessive action. Introducing the concept of "creative hopelessness" and expressing "tug-of-war" metaphor
Session 3	Proposing concepts like "control as the problem"," polygraph", "fall in love" and "chocolate cake" and introducing the concept of acceptance and "finger trap" exercise.
Session 4	Suggesting the concept of "diffusion", "milk, milk, milk" exercise, and "grocery store" and the concept of acceptance and "passengers on the bus" metaphors.
Session 5	Working on diffusion and take his/her mind for a walking exercise, acceptance concept and "two scales" metaphor and "obsessions on paper" exercise.
Session 6	Working on the concept of values, "heart-shaped box" and "bull's eye" exercises; the concept of acceptance and "annoying party guest" metaphor and committed acts.
Session 7	Including present moment awareness", "counting breaths" and "watching thought" concepts; mindfulness exercises and "kindergarten teacher" metaphor and the concept of "self as a context"; "TV set" and "chessboard" metaphors
Session 8	Including mindfulness "solders on parade" exercise; reviewing of all processes and using passengers on the bus metaphor and discussing the end of therapy.

3. Results

The subjects in the ACT group with OCD family history were 33.3% men and 66.7 women; 20% men and 80% women in ACT group without OCD family history; 26.7% men and 66.7% women in the control group with OCD family history and 40% men and 60% women in the control group without OCD family history. In addition, 26.7% of participants in ACT group with OCD family history were single and 73.3% were married; 60% single and 40% married in ACT group without OCD family history; 33.3% single and 66.7% married in control group OCD family history and 40% single and 60% married in the control group without OCD family history. In ACT group with OCD family history, 13.3% had under-high school diploma education, 53.3% high-school diploma and 33.3% B.Sc. Degree. In ACT group without OCD family history, 6.7% had under-high-school diploma, 60% high-school diploma and 33.3% B. Sc. Degree. In the ACT group with OCD family history, 33.3% had high-school diploma, 53.3% B. Sc. and 13.3% M. Sc. Degrees. In the control group

without OCD family history, 33.3% had high-school diploma, 53.3% B. Sc. and 13.3% M. Sc. Degrees. The mean age of participants in ACT group with OCD family history was 34.67, the ACT group without OCD family history was13.28, control group with OCD family history was 34.07 and control group without OCD family history was 32.53. The mean duration of disease in ACT group with OCD family history was 5.13, ACT group without OCD family history was 4.07, control group with OCD family history was 2.93, and control group without OCD family history was 2.67.

Table 2 shows the mean and standard deviation of pretest, posttest, and follow-up related to OCD and quality of life variables in the experimental and control group.

Table 2. The mean and standard deviation of pretest, posttest, and follow up related to OCD and quality of life variables in the experimental and control group

Variables	Group	ACT with OCD family history		ACT without OCD family history		Control with OCD family history		Control with OCD family history	
	Test	M	S	M	S	M	S	M	S
OCD	Pretest	30.20	2.808	30.80	2.484	29.27	8.058	29.60	4.968
	Posttest	18.80	1.821	21.87	2.232	29.53	7.357	29.80	4.004
	Follow up	19.07	1.831	22.40	2.694	29.87	6.760	30.07	4.877
Quality of life	Pretest	68.93	8.379	73.13	8.132	73.20	1.455	72.60	11.407
	Posttest	82.60	8.365	86.93	8.405	73.60	9.508	72.93	11.417
	Follow up	82.07	7.941	86.67	8.182	73.13	9.899	72.93	11.285

As shown, the mean intensity of OCD in both ACT group in posttest and follow-updecreased while the results of the posttest and follow-up in two control groups was not different from the pretest. In addition, the average quality of life in both ACT group in posttest and follow-upincreasedfrom pretest while the results of the posttest and follow-up in two control groups was not significantly different.

The multivariate analysis of variance was used to measure the significant differences in the pre-test scores of OCD and quality of life in 4 groups. In this type of analysis, the following conditions should be met to reach the satisfactory results.

The normality of the variables was measured by the Smirnov- Kolmograph test which was not significant. The homogeneity of covariance variance matrix was investigated using Box test. The significance of the box test is more than 0.05, indicating that the variance-covariance matrix is homogeneous (Mbox= 30.15, F= 5.67 and p=0.123). To investigate the homogeneity of variances, the test Homogeneity of Levin variances was used. Levin's test calculated for OCD and quality of life were not statistically significant (OCD F= 5.28 P= 0.435, quality of life F= 0.996 P=0.446). Therefore, the assumption of homogeneity of variances was confirmed. Table 3 shows the results of the multivariate analysis of variance test for the variables of OCD and quality of life.

Table 3. The result of Multivariate Tests for pretest of four groups in OCD and Quality of Life

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.995	5887.409[b]	2.000	55.000	.000
	Wilks' Lambda	.005	5887.409[b]	2.000	55.000	.000
	Hotelling's Trace	214.088	5887.409[b]	2.000	55.000	.000
	Roy's Largest Root	214.088	5887.409[b]	2.000	55.000	.000
Group	Pillai's Trace	.090	.881	6.000	112.000	.511
	Wilks' Lambda	.911	.871[b]	6.000	110.000	.519
	Hotelling's Trace	.096	.860	6.000	108.000	.527
	Roy's Largest Root	.072	1.349[c]	3.000	56.000	.268

The results of Wilkes-Lambda test in Table 3 show that is no significant difference among the four groups. Accordingly, multivariate analysis of variance with repeated measures was used to test the difference in the pre-test, post-test, and follow-up scores in both OCD and quality of life. Table 4 represents the results of multivariate analysis of variance with repeated measures for OCD and quality of life.

Table 4. Results of multivariate analysis of variance with repeated measures for OCD and quality of life

Source	Measure		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
factor1	OCD	Sphericity Assumed	1929.244	2	964.622	45.567	.000	.440
		Greenhouse-Geisser	1929.244	1.171	1647.645	45.567	.000	.440
		Huynh-Feldt	1929.244	1.201	1606.297	45.567	.000	.440
		Lower-bound	1929.244	1.000	1929.244	45.567	.000	.440
	Quality of life	Sphericity Assumed	5849.644	2	2924.822	43.571	.000	.429
		Greenhouse-Geisser	5849.644	1.045	5598.916	43.571	.000	.429
		Huynh-Feldt	5849.644	1.066	5489.946	43.571	.000	.429
		Lower-bound	5849.644	1.000	5849.644	43.571	.000	.429
factor1 * OCDfamily history	OCD	Sphericity Assumed	14.444	2	7.222	.341	.712	.006
		Greenhouse-Geisser	14.444	1.171	12.336	.341	.596	.006
		Huynh-Feldt	14.444	1.201	12.027	.341	.601	.006
		Lower-bound	14.444	1.000	14.444	.341	.561	.006
	Quality of life	Sphericity Assumed	580.844	2	290.422	4.326	.015	.069
		Greenhouse-Geisser	580.844	1.045	555.948	4.326	.040	.069
		Huynh-Feldt	580.844	1.066	545.128	4.326	.039	.069
		Lower-bound	580.844	1.000	580.844	4.326	.042	.069
Error(factor1)	OCD	Sphericity Assumed	2455.644	116	21.169			
		Greenhouse-Geisser	2455.644	67.913	36.159			
		Huynh-Feldt	2455.644	69.661	35.251			
		Lower-bound	2455.644	58.000	42.339			
	Quality of life	Sphericity Assumed	7786.844	116	67.128			
		Greenhouse-Geisser	7786.844	60.597	128.501			
		Huynh-Feldt	7786.844	61.800	126.000			
		Lower-bound	7786.844	58.000	134.256			

As shown above, to check the assumptions of repeated measures analysis of variance test, Mauchly's sphericity test was used. Mauchly's Test of Sphericity was significant for OCD and quality of life. Therefore, the results of the Green-Haas

Grazer statistic are reported. The results indicated that a significant difference exists between pre-test, post-test, and follow-up scores in OCD and quality of life. OCD family history has no significant effect. Partial Eta Squared is strong for OCD and quality of life. In Table 5 the results of Bonferroni post hoc test for comparing the pre-test, post-test and follow-up of OCD and quality of life among 4 groups is presented.

Table 5. The results of Bonferroni post hoc test for comparing the pre-test, post-test and follow-up of OCD and quality of life among 4 groups

Variable	Group	Assessment period	mean difference (I-J)		
			Pre (J)	Post (J)	Follow (J)
OCD	ACT with OCD family history	Pretest (I)	----	14.267*	11.600*
		Posttest (I)	-14.267*	—	-2.667
		Follow (I)	-11.600*	2.667	—
	Control with OCD family history	Pretest (I)	—	-.333	-.400
		Posttest (I)	.333	—	-.667
		Follow (I)	.200	.667	—
OCD	ACT without OCD family history	Pretest (I)	—	15.400*	13.800*
		Posttest (I)	-15.400*	—	-1.600
		Follow (I)	-13.800*	1.600	—
	control without OCF family history	Pretest (I)	—	0.533	0.067
		Posttest (I)	-0.533	—	-0.467
		Follow (I)	-0.067	0.467	—
Quality of life	ACT with OCD family history	Pretest (I)	----	-19.200*	-14.067*
		Posttest (I)	19.200*	—	15.133
		Follow (I)	14.067*	-5.133	—
	Control with OCD family history	Pretest (I)	0.467	-0.200	—
		Posttest (I)	-0.467	—	-0.667
		Follow (I)	0.200	0.667	—
Quality of life	ACT without OCF family history	Pretest (I)	—	15.400	13.800
		Posttest (I)	-15.400	—	-1.600
		Follow (I)	-13.800	1.600	—
	control without OCF family history	Pretest (I)	—	0.800	-0.533
		Posttest (I)	-0.800	—	-1.333
		Follow (I)	0.533	1.333	—

The mean difference is significant at the .05 level.*

As shown, post-test and follow-up scores of OCD decreased significantly compared to pre-testing ACT groups with and without OCD family history while post-test scores did not change significantly compared to follow-up's. However, there is no significant difference between the post-test scores from the pre-test and the follow-up scores from the post-test in the control groups. In addition, post-test and follow-up scores of quality of life increased significantly from pre-test, and post-test scores did not change significantly compared to follow-up in ACT groups with and without OCD family history. However, there is no significant difference between

the post-test scores from those of the pre-test and the follow-up scores from those of the post-test in the control groups.

4. Discussion

The present study aimed to investigate the effectiveness of ACT on improving symptoms and increasing quality of life in patients with OCD in interaction with OCD family history.

The results of multivariate analysis of variance with repeated measures in OCD show that there is a significant difference between the pretest-posttest scores. In addition, symptoms of OCD among the patients have decreased as a result of ACT, and the lack of significant differences in post-test and follow-up scores indicates the reliability of treatment outcomes in the follow-up phase. Additionally, OCD family history had no effect on the treatment and the effectiveness of ACT was the same in both groups with and without OCD family history.

The results of this study were in line with those of Izadi, and Abedi (2013), Safari, Esfahani, Sepanta, and Amiri (2013), Twohing, Heyes, and Masuda (2006), Twohing (2007). In early sessions, ACT mainly focuses on providing the patient with a model treatment (although not necessarily the disorder). Particularly, it mainly emphasizes to (a) engage the patient in a discussion of how previous attempts to solve the problem have failed to work, and (b) identify attempts to control thoughts and feelings as a factor in the maintenance of the illness. The emphasis in later sessions is placed on a) clarifying values and (b) discussing the importance of adaptive (or value-directed) functioning despite having unwanted thoughts and feelings (Tolin, 2009). ACT therapists frequently instruct patients to monitor the frequency of attempts to control thoughts and feelings, and such control attempts become direct targets of the intervention (Hayes et al., 1999). The behavioral commitment exercises described by Twohig (2009) consist of direct instructions to refrain from compulsions (e.g., “having a meaningful conversation without engaging in compulsions” or choosing “not to mentally protect people for one hour per day”). ACT emphasizes modification of metacognition (i.e., thoughts about one's thoughts and feelings). The ACT patient is taught (frequently using metaphors and experiential exercises, rather than direct didactic instruction) not to interpret their obsession as literally true, and that the most effective way to respond might be to 'observe' some of the obsessive thoughts without directly responding to them mentally or behaviorally. As in ACT, however, the underlying message is: “The way you have been thinking about things might be part of the problem, and you may be able to feel better by practicing another way of looking at things.” The patient is told that it is impossible to control obsessive thoughts and emotional distress directly and it is unhelpful to attempt to do so. However, the patient is encouraged to focus his/her efforts on changing his/her overt behavior (compulsions, avoidance, and value-directed behavior). The ACT therapist encourages the patient to experience unwanted thoughts through the strategies such as repeating the thought over and over again out loud, or deliberately thinking the thoughts and watching them “come and go”.

The results of multivariate analysis of variance test with repeated measures for the

quality of life variable indicate the significant difference exists between pretest-posttest scores and the quality of life in people with OCD increased as a result of ACT. Furthermore, the lack of significant differences in posttest and follow-up scores indicates the consistency of treatment outcomes in the follow-up phase. Besides, OCD family history has no effect on the treatment and the effectiveness of ACT was the same in both groups with and without OCD family history. These results are in line with those of Borghei, Roshan, & Bahrami (2020), Narimani, Maleki-Pirbazari, Mikaeili, & Abolghasemi (2016).

This finding indicates that ACT reduces the level of stress in OCD patients by increasing the level of acceptance and reducing mental inhibition, leading to physiological stress and physical pain and discomfort. In addition, ACT helps OCD patients to experience obsessive thoughts in a new way by increasing cognitive defusion and conscious acceptance, and engage with and accept such thoughts, which they had previously sought to avoid. Reducing physical pain and the avoidance of obsessive thoughts and using the energy to move toward values rather than fighting obsessive thoughts will improve the quality of life of OCD patients.

The limitations of the present study is that pre-test, post-test and follow-up were performed by the therapist which can cause biased results. In addition, the duration of the disorder and the age of patients affect the outcome of treatment, which is not studied in this study and is considered as a limitation. Therefore, it is recommended that an independent assessor unaware of the treatment procedure be used.

5. Conclusion

This study provided empirical evidence for the effectiveness of ACT for OCD. Therefore, psychologists and psychiatrists can benefit from this therapy to decrease the symptoms of OCD and increase the quality of life in patients.

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Conflict of interest

The authors declare that there is no conflict of interest.

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Research Paper: Predicting Attitudes toward Marital Infidelity Based on Attachment and Perfectionism Styles

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Abstract

The present study aims to predict the attitude towards marital infidelity based on attachment and perfectionism styles. The research method was correlational-descriptive and the statistical population was all married students of Islamic Azad University, Lahijan Branch. A sample of 369 students was selected by convenience sampling method. Adult Attachment Questionnaire, The Perfectionism Questionnaire and Attitude to Marital Infidelity Questionnaire were used to collect data. The research hypotheses were examined through Pearson correlation test and multiple regression and found that a significant correlation exists between marital infidelity with ambivalent attachment style (0.450), avoidant attachment style (0.348), safe style (-0.519), positive perfectionism (-0.403) and negative perfectionism (0.433). In addition, the multiple regression model indicated that attachment and perfectionism styles could accurately predict 34% and 25% of the variance of marital infidelity, respectively. The results indicated that creating a secure attachment style and positive perfectionism in individuals is related to reducing marital infidelity and consequently increasing family stability.

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1. Introduction

The marriage contract is a special human issue, and since the existing human being is not fixed, human categories do not fit into a fixed definition. After the first marriage, most people expect themselves and their spouse to remain sexually and emotionally faithful during their marriage. In addition, most people condemn extramarital sex as a misconduct and consider marital fidelity as an important issue. The beliefs and behaviors of different people are negatively related to extramarital affairs, infidelity against spouse and its consequences; however, marital infidelity occurs in both women and men and its incidence varies based on its sampling and definition. In addition, it varies from approximately 12% to 75% of the opinions of married people who have been exposed to it at least once (Allen, & Baucom, 2004).

The recent statistics released from the United States indicated that 41% of American couples have been involved in extramarital affairs. The studies conducted in Iran indicated that extramarital affairs and attitudes toward infidelity are the strongest factors in predicting divorce rates. Accordingly, attachment styles and perfectionism play a significant role in the couples' attitudes. Attachment is considered as a special emotional relationship that requires calm and exchange of pleasure-care which includes three safe insecure, avoidant insecure and anxiety insecure styles. More accurately, attachment is the deep emotional connection we make with certain people in our lives that makes us feel cheerful and happy when interacting with them, and feel comfortable having them with us when we are stressed (Rajabi, Mousaviannejad, & Taghipour, 2014). Individuals' attachment styles determine the emotional, cognitive principles and strategies that guide emotional reactions in individuals and interpersonal relationships (Cohen, 2005). Bowlby (1969, cited in Akbari, Shafiabadi, & Honarparvaran, 2011) argues that many forms of psychological distress and personality disorders are due to the fact that the child is deprived of maternal care or the child is not stable to have a relationship with attachment. Bowlby has clearly predicted that disrupting the attachment relationship by creating distrust in the child leads to psychological disorders. Accordingly, when a child forms negative perceptions of himself and others or when he/she adopts unrealistic strategies for processing thoughts and feelings related to attachment, they become more vulnerable in social, especially marital life (Hadi, Eskandari, Sohrabi, & Farokhi, 2017). Therefore, attachment styles are operational patterns that are passed on from caregivers to children, and the type of mother-child relationship is influenced by such patterns (Platts, Tyson, & Mason, 2002). Thus, attachment experiences in childhood have a profound effect on personality development and subsequent attachment relationships in married life (Wearden, Peters, Berry, Barrowclough, & Liversidge, 2008).

Allen and Baucom (2004) found that avoidance style presents the relationship with the original couple as an inappropriate intimacy and forces one to enter into a relationship outside of his original attachment. Such people often experience mistrust of the couple, which creates their

distance and they are less worried about losing their relationship. Because people with an avoidant style cannot establish deep and intimate relationships with co-workers, they are less satisfied with their sexual and marital relationships and experience more interpersonal conflicts, especially with their spouse, which is itself a strong factor for marital infidelity. According to Sayadpour (2007), people with insecure attachment styles are afraid of supportive resources because they have a relationship based on distrust, have inappropriate social relationships, and a higher emotional vulnerability to stress. Abdi, Khosh Konesh, Poorabrahim, and Mohammadi (2012) found that people with insecure attachment style usually have more extramarital relationships, they can have sex without love and affection for the other person and suddenly have a relationship with people outside the marital relationship. However, people who have an ambivalent attachment style have a negative image of others and engage in inappropriate self-disclosure due to fears of rejection by their spouse. Such people may fall in love at a glance and experience a lot of anger and reconciliation. Additionally, (Hadi et al., 2017) believed that attachment styles have a significant effect on couples' attitudes toward marital cheating. People with insecure attachment styles had lower levels of marital commitment. Perfection refers to a desirable state which is far from the status quo.

Considering the extent of this distance and what reference determines the desired state, perfectionism is of different types, some of which are healthy and some are pathological. Rice and DeLove (2002) believed that perfectionism can be divided into positive and negative perfectionism. People with negative perfectionism make fundamental mistakes and have high levels of self-doubt and self-criticism. Such factors predict problematic psychological consequences such as anxiety, depression, lack of self-esteem and inner shame. Conversely, positive perfectionism has a significant correlation with high personal criteria, good performance and positive adaptation.

The results (Tahoor, Jafari, Karaminia, Akhavan, 2019) indicated that a relationship exists between perfectionism and different dimensions of mental health. In addition, Perfectionism has a high potential for communicating with various attitudinal variables, such as a high potential for bonding with life and family satisfaction (Park, Heppner, & Lee, 2010). Spouses with perfectionist tendencies and features have special expectations from themselves and their spouses related to marital relations and consider their relationship based on perfectionism level. Therefore, it seems that as the levels of perfectionism increase, the amount of marital differences increases. Some studies were carried out such as "Studying the factors affecting marital infidelity" by Tau, Coates, and Maycock. (2012), "the relationship between perfectionism and marital satisfaction" by Gol, Rostami, and Goudarzi (2013); "infidelity, Trust, Commitment and Marital Satisfaction" by McCray (2015). Furthermore, the studies conducted in Iran are "studying the attachment style and marital satisfaction of married people involved in internet infidelity" by Abdi et al. (2012); "The factors underlying female marital infidelity" by Fathi, Fekr Azad, Ghaffari,

and Boalhari, (2013); "Multiple Relationships of Attachment Styles, Personality Dimensions and Marital Satisfaction with Marital Breach" by Sami, Mohammad Nazari, Mohsenzadeh, and Taheri (2014); "Investigating the causes of couple infidelity in Bushehr" by Aghajan Begloo and Motaharnia (2014); and "Structural model of predicting marital commitment based on attachment styles and mediating variables of self-control and early maladaptive schemas" by Hadi et al., (2017) Since understanding the causes of marital infidelity and its influential factors is very important for both couples regarding some benefits such as reducing misunderstandings, the benefits include increasing awareness of the extent of the problem and helping to feel the ability prevent such issues in the future. Numerous personality, social and family factors are the reasons for marital infidelity. Therefore, this study aims to predict the attitude towards marital infidelity based on attachment and perfectionism styles.

2. Method

The research method is descriptive-correlational and cross-sectional due to investigating the relationships between research variables. The statistical population consisted of all married students of Lahijan Islamic Azad University. The sample included 369 married students of Lahijan Islamic Azad University who were selected by the convenience sampling method. A questionnaire was distributed among married students of different fields through available sampling. It is worth noting that after obtaining the subjects' consent, the questionnaires were given and the respondent's personal details were kept confidential. It took two months, from May 1st to the end of June, to complete the questionnaires. Additionally, the average time for filling in the questionnaires by the subjects was 35 minutes in the university.

To test the research hypotheses and analyze the data, SPSS software version 25 was used. Dispersion and central tendency measures were used for descriptive statistics. Multivariate regression and Pearson correlation test were used to test the hypotheses.

The statistical data were collected by survey method related to field research and questionnaire distribution. Three questionnaires were used to collect data as follows:

Adult Attachment Questionnaire, developed by Hazen and Shaver (1987) to measure adult attachment, which has 21 questions consisting of 2 sections. The scoring of the first part of this questionnaire is based on the mark that each subject made on a 7-point Likert scale in his/her response to each description; by which the option "I completely disagree" is given a score of zero, the option "Somewhat disagree" is given a score of 6, and the option "I completely agree" is given a score of 6. Accordingly, the Likert scale is used by converting scores and using the distance scale. Considering three descriptions that should be judged by the subject in this section, three scores are obtained, in which the first to three scores describe the avoidant attachment, anxiety-ambivalent attachment and secure attachment rates, respectively. Second, one out of three options is to be selected. The subject should choose which of the three descriptions he /

she considers best in line with his / her characteristics. Therefore, No. 1, 2 and 3 as nominal scales representing avoidance, anxiety-ambivalent and safe attachments which are used separately in the analysis.

The Attitude to Infidelity Questionnaire: This Questionnaire was developed by Watley (2008). This scale includes 12 phrases, each indicates the negative and positive feelings towards the category of betrayal, to which the subject gives a score from 1 to 7 based on their feelings. In the betrayal questionnaire, the amount of desire and acceptance or rejection from the perspective of different people is measured. The highest and lowest scores were 84 and 12, indicating acceptance and rejection of betrayal. In the study conducted by Watley (2008), the reliability of the scale using Cronbach's alpha coefficient was reportedly 84%.

The Perfectionism Questionnaire: This Questionnaire was developed by Terry-Short, Owens Glynn, Slade and Dewey in 1995 to measure positive and negative perfectionism, which consists of 40 items, 20 of which measure positive and the other 20 items measure negative perfectionism, according to responses on a 5-point Likert scale from strongly agree to strongly disagree. 20 items measured positive perfectionism and twenty other items measure negative perfectionism. The items on a 5-point Likert scale measure subjects' perfectionism on a scale of one to five in both positive and negative contexts. The minimum and the maximum scores of the subjects in each test scale are 40 and 200, respectively. To determine the validity of this scale, the alpha coefficient for positive and negative perfectionism subscales for all subjects and female and male students were 0.90 and 0.87, 0.91 and 0.88, and 0.89 and 0.86, respectively, which indicates high internal consistency of this scale. Additionally, the correlation coefficients between the scores of 90 subjects in two shifts with 4 weeks interval for all subjects, female subjects and male subjects were r = 0.86, r = 0.84 and r = 0.87, respectively, indicating high validity of the scale. Besharat (2009) used this test to determine the validity of the scale through calculating the correlation coefficient between the subscales of this test with those of Goldberg General Health Questionnaire (1972) and Cooper-Smith Self-Esteem Scale (1967), as well as analyzing the main components of the test. The coefficients and the results confirmed the validity of Short et al.'s (1995) Positive and Negative Perfectionism Questionnaire.

3. Results

The findings of data analysis including descriptive statistics indicators and test results are presented. First, the statistical population of the study based on gender, age and level of education is as follows: 51% of the respondents are men and 49% are women In addition, 26.8% of the respondents are under 25 years old, 43.6% are between 25-30 years old and 29.6% are over 30 years old. Furthermore, 3.35% of the respondents are bachelors, 2.56% are M.A and 5.8% are Ph. D

In the following tables show the descriptive statistics of attachment, perfectionism and marital infidelity, respectively.

Table 1. Status of descriptive statistics of attachment styles index

Variable	Mean	SD	lowest score	Highest score
Ambivalent style	18.45	6.46	3	36
Avoidance style	18.28	7.45	1	34
Safe style	17.10	7.02	1	35

Table 1 shows the mean and standard deviation of ambivalent styles are 18.45 ± 6.46, avoidance is 18. 28 ± 7.45 and safety was 17.10 ± 7.02.

Table 2. The descriptive status of the perfectionism index

Variable	Mean	SD	lowest score	Highest score
Marital infidelity	52.04	15.32	24	90
Negative perfectionism	48.15	15.38	21	89

Table 2 shows the mean and standard deviation of positive perfectionism is 15.32 ± 52.04 and negative perfectionism is 48.15 ±15.38

Table 3. The descriptive status of marital infidelity index

Variable	Mean	SD	Lowest score	Highest score
Marital infidelity	52.04	15.32	15	72

Table 3 shows the mean and standard deviation of the marital infidelity index is 52.04 ±15.32.

Table 4 shows correlation coefficients of attachment styles with spouses' infidelity.

Table 4. Correlation coefficients of attachment styles with spouses' infidelity

Variable	Spouses' infidelity	Ambivalent style	Avoidant style	Safe style
spouses' infidelity	1.000			
Ambivalent style	.450**	1.000		
Avoidant style	.348**	.449**	1.000	
Safe style	-.519**	-.521**	-.268**	1.000

** Significance level: 99%; * significance level: 95%

As shown in Table 4, a significant correlation exists between couples' marital infidelity with ambivalent style (correlation coefficient: 0.450), avoidance style (correlation coefficient: 0.348) and safe style (correlation coefficient: -0.519). In addition, as insecure attachment - ambivalent and avoidant styles increases, the respondents' marital infidelity rate increases, and vice versa, as the levels of marital infidelity decreases, secure attachment style also decreases.

In Table 5 is presented correlation coefficients of perfectionism and marital infidelity

Table 5. Correlation coefficients of perfectionism and marital infidelity

Variable	Rumination	Positive perfectionism	Negative perfectionism
Rumination	1.000		
Positive perfectionism	-.403**	1.000	
Negative perfectionism	.433**	-.378**	1.000

** Significance level: 99%; * significance level: 95%

As shown in Table 5, a significant correlation exists between rumination with positive perfectionism (correlation coefficient: -0.403) and negative perfectionism (correlation coefficient: 0.433). That is, as positive perfectionism increases, the rate of marital infidelity decreases, and conversely, as negative perfectionism increases, the rate of marital infidelity increases too.

Table 6 shows the regression test of the effect of attachment styles on marital infidelity.

Table 6. The regression test of the effect of attachment styles on marital infidelity

Model	Correlation coefficient	Coefficient of determination	Standardized coefficient of determination	Degree of freedom	Mean squares	F coefficient	Significance level	Durbin-Watson coefficient
Enter	.580	.336	.331	3	4978.18	60.928	.000	1.367
Model	Non-standard coefficient		Standard coefficient	T coefficient	Significance level	Multi-collinearity coefficient		
	b coefficient	Error estimation	β			Tolerance coefficient	Inflation coefficient	
Intercept value	40.283	2.704		14.899	.000			
Ambivalent style	.300	.093	.175	3.233	.001	.625	1.601	
Avoidance style	.248	.071	.167	3.475	.001	.797	1.255	
Safe style	-.602	.079	-.383	-7.616	.000	.727	1.376	

The Durbin-Watson Test (Table 7) was used to investigate the error independence. If its value ranged 1.5-2.5, no correlation exists between errors. As shown by Durbin-Watson coefficient (1.637), the regression model coefficient is in the desired range.

Multi-collinearity refers to the high-level and unacceptable cross-correlation of independent research variables, indicating that the effects of independent variables on the dependent variable cannot be separated. Therefore, the tolerance coefficients and variation-inflation factor were used to study the multi-collinearity of predictor variables. Numerous score were reported regarding the acceptable number of the tolerance coefficient, which 0.1 is considered as the most consistent coefficient for non-multicollinearity, although 0.2 have been reported in other sources. In addition, the values accepted in research literature varies regarding the variance coefficient of inflation, among which the minimum acceptance score was 10 and score

coefficient 5, 4, and even 2.5 have been identified as acceptable levels. As the multi-collinearity coefficients (tolerance coefficient and inflation variance coefficient) show, assuming the multi-collinearity of independent variables is rejected. The simultaneous regression model indicates that the coefficient of determination of the model is 0.336 (standard coefficient: 0.331). That is, the regression test indicated that the regression model could predict 0.34% of the variance of marital infidelity. The significance level of F statistic is less than 0.05, representing that the change shown by the model is not accidental. In addition, the reported beta coefficients indicate that the best predictors of marital infidelity are safe style (beta: 0.383), ambivalent style (β= -0.175) and avoidance style (β= -0.167), respectively.

Table 7 shows the regression test of the effect of perfectionism on marital infidelity.

Table 7. The regression test of the effect of perfectionism on marital infidelity

Model	Correlation coefficient	Coefficient of determination	Standardized coefficient of determination	Degree of freedom	Mean squares	F coefficient	Significance level	Durbin-Watson coefficient
Enter	.504	.254	.250	2	5643.71	61.643	.000	1.558

Model	Non-standard coefficient		Standard coefficient	T coefficient	Significance level	Multi-collinearity coefficient	
	b coefficient	Error estimation	B			Tolerance coefficient	Inflation coefficient
Intercept value	39.179	2.980		13.150	.000		
Positive perfectionism	-.201	.035	-.279	-5.688	.000	.857	1.167
Negative perfectionism	.235	.035	.327	6.675	.000	.857	1.167

The simultaneous regression model (Table 7) indicates that the coefficient of determination of the model is 0.254 (standard coefficient: 0.250). That is, the regression test shows that the regression model could predict 0.25% of the variance of marital infidelity. The significance level of F statistic is less than 0.05, indicating that the change shown by the model is not accidental. Additionally, the reported beta coefficients indicated that the best predictors of marital infidelity are positive perfectionism (β= 0.327) and negative perfectionism (β= -0.279), respectively.

4. Discussion

As represented by correlation coefficients, a significant correlation exists between couples' marital infidelity and ambivalent style (correlation coefficient: 0.450), avoidance style (correlation coefficient: 0.348) and safe style (correlation coefficient: -0.519). That is, as insecure attachment styles - ambivalent and avoidant

–increases, the rate of respondents' marital infidelity increases, and vice versa, as the secure attachment style increases, the level of marital infidelity decreases. The regression model could predict 0.34% of the variance of marital infidelity. Safe (beta: 0.383); ambivalence (beta: -0.175) and avoidance styles (beta: -0.167) are considered as the best predictors of marital infidelity, respectively. Therefore, it is confirmed that a relationship exists between attachment styles and infidelity. Such a finding is in line with the studies conducted by Sami et al., (2014), Abbasi, Nazari, Mohsenzadeh and Taheri (2014), Hadi et al., (2015), Abdi et al., (2012). Accordingly, attachment experiences in childhood have a profound effect on personality development and subsequent attachment relationships in married life (Wearden et al., 2008). Abdi et al., (2012) found that attachment behaviors and their consequences are active throughout the life cycle and are limited to childhood. According to Akbari et al., (2011) the theory of attachment styles is considered as one of the most important explanations for couples' involvement in extramarital relationships. The studies indicated that attachment dynamics shapes adult emotional relationships (Hazen, & Shaver, 1987), and children with insecure attachment patterns experience difficulty in romantic-friendly -sexual and collective adaptive behaviors in adulthood. Researchers considered the creation of attachment schema in the child as a factor that interacting with the environment determines the type of one's future behavior (Pereira, Taysi, Orcan, & Fincham, 2014). Unlike child-parent relationships, attachment is usually reciprocal in adult relationships, i.e. peers play the role of an attachment image to each other, and their sexual or emotional relationships usually act as an initial attachment image (Parker, & Campbell, 2017). Cassidy and Berlin (1994) reported that people with a safe style have more self-confidence, a positive self-image, and higher self-awareness. Therefore, such people are less likely to have extramarital affairs as abnormal and harmful relationships. Since the relationship with the spouse is regarded as one of the longest and most important human relationships, the important and determining role of a secure attachment style in maintaining and promoting it is clearer and more specific. According to Feeney (2017), avoidant individuals tend to report activities that indicate low psychological intimacy; e.g. overnight sex, having a sexual relationship outside the family and a love-free sex. Avoidant individuals tend to report activities that indicate low psychological intimacy; e.g. overnight sex, having a sexual relationship outside the family and a love-free sex. According to Allen and Bucham (2004), avoidance style presents the relationship with the original couple as an inappropriate intimacy and forces him to enter into a relationship outside of his original attachment. Such people often experience distrust of the couple, creating a distance between them and are less worried about losing their relationship. Since people with an avoidant style cannot establish deep and intimate relationships with co-workers, they are less satisfied with their sexual and marital relationships and experience more interpersonal conflicts, especially with their spouse, which is itself a strong factor for marital infidelity. According to Sayadpour

(2007), people with insecure attachment styles are afraid of support sources because they have a relationship based on mistrust, have inappropriate social relationships and a higher emotional vulnerability to stress. According to Abdi et al., (2012), people with insecure attachment style usually have more extramarital affairs, they can have sex without love and affection for the other person and suddenly have a relationship with people outside the marital relationship. However, people with ambivalent attachment styles have a negative image of others and engage in inappropriate self-disclosure due to fears of rejection by their spouse. Such people may fall in love at a glance and experience a lot of violence and reconciliation. Further Hadi et al., (2017) found that attachment styles have a significant effect on couples' attitudes toward marital infidelity. Reportedly, people with insecure attachment styles have lower levels of marital commitment. As indicated by the correlation coefficients, a significant correlation exists between rumination and positive (correlation coefficient: -0.403) and negative perfectionism (correlation coefficient: 0.433). That is, as positive perfectionism increases, the rate of marital infidelity decreases, and vice versa, as the negative perfectionism increases, marital infidelity increases.

The regression model could predict 0.25% of the variance of marital infidelity. The reported beta coefficients indicated that the best predictors of marital infidelity are positive perfectionism (beta: 0.327) and negative perfectionism, respectively (beta: 0.279). Accordingly, a relationship exists between perfectionism and marital infidelity. Such a finding is in line with the results of research Golparvar and Satayesh Manesh (2014), Gol, Rostami, and Goudarzi (2013). According to Stoeber, Harris, and Moon (2007), Stoeber, Kempe, and Keogh (2008) positive (normal) perfectionists are defined as those who show high levels of perfectionistic endeavor with a low level of perfectionistic concern. The studies indicated that the perfectionists suffer from many psychological problems such as feelings of failure, guilt, indecision, shame, slowness, low self-esteem, anorexia nervosa, depression and personality disorders. Perfectionists are defined as those who show high levels of perfectionistic endeavor with a low level of perfectionistic concern. However, negative (abnormal) perfectionists have high levels of perfectionistic effort and concerns. It was found that negative perfectionists have higher marital problems (Sharabaf, Ghannad, Hakmabadi, 2014). The study by Golparvar and Setayeshmanesh (2014) indicated that as the levels of perfectionism increases, the level of marital satisfaction decreases. Furthermore, perfectionism has a high potential for relating to various attitudinal variables, including a high capacity to bond life and family satisfaction (Park et al., 2010). In addition, spouses with perfectionist tendencies and features have special expectations from themselves and their spouses considering marital relations, and consider their relationship based on their level of perfectionism. Therefore, as the levels of perfectionism increases, the amount of marital differences increases. As the coefficients of determination in the regression test showed, attachment and perfectionism styles can accurately predict

34% and 25% of the variance of marital infidelity, respectively. Therefore, attachment and perfectionism styles predict the attitude towards marital betrayal, which confirms the third hypothesis. Such a finding is in line with the studies conducted by Golparvar and Satayesh Manesh (2014), Sami, Mohammad Nazari, Mohsenzadeh, and Taheri (2014), Abbasi et al. (2014), Hadi et al. (2017), Abdi et al. (2012), Gol et al. (2013). Therefore, people with insecure attachment styles tend to have more extramarital affairs, have love-free sex and to have sex outside the marital relationship. However, people with ambivalent attachment styles have a negative image of others and engage in inappropriate self-disclosure due to fears of rejection by their spouse. Such people may fall in love at a glance and experience a lot of violence and reconciliation. Generally, attachment styles have a significant effect on couples' attitudes toward marital infidelity. People with insecure attachment styles have lower levels of marital commitment. However, infidel women scored higher in the dimensions of perfectionism (self-oriented, other-oriented, and community-oriented) than those of ordinary women. In addition, considering marital relations, spouses with perfectionist tendencies and features have special expectations of themselves and their spouses, and focus on their perfectionism level in their relations. Therefore, as the levels of perfectionism increase, the amount of marital differences increases. Accordingly, the future researchers are suggested using longitudinal studies due to the cross-sectional method in the present study. Besides, since not using other methods of data collection such as interviews has been another research limitation. It is suggested that researchers use survey method and its generalizability power through methods such as group and in-depth interviews to give more depth to the research findings and add to the accuracy of the findings in two dimensions of generalizability and in-depth findings. Finally, they should examine the role of moderator variables such as duration of marriage, marital satisfaction, marital conflicts, and intellectual differences.

5. Conclusion

Therefore, it can be concluded that having a secure attachment style as well as a positive perfectionism style can be associated with less marital infidelity in couples. Consequently, the parents had better learn the proper parenting skills which can help their children develop secure attachment and positive perfectionism. This can, in turn, protect them from marital relationship issues.

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Conflict of interest

The author declares that there is no conflict of interest.

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Research Paper: The Prediction of Internet Addiction in Female Students Based on Cloninger's Temperament and Character

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Abstract

The present study was conducted on female students of Allameh Tabataba'i University to predict Internet addiction through a seven-factor Cloninger model. The statistical population of the study consisted of all female students of Allameh Tabataba'i University studying in the academic year 2019-2020. Moreover, a sample population of 150 people was selected through the convenience sampling method. Young's Internet Addiction Test and Cloninger's Temperament and Character Inventory (TCI-125) were administered to the sample population. The data were analyzed by Pearson's correlation test, multiple regression. Results of Enter regression indicated that persistence dimension (β=-0.355) could account for 18.6% of variances of Internet addiction. The results of stepwise regression showed that persistence (β=-0.349) could predict 12.2% of variances of Internet addiction. Then, self-directedness was added to the prediction model which increased the explained variances of Internet addiction up to 15.4% of which 3.2% accounts particularly for self-directedness. This study may contribute to more accurate identification of involved factors in this phenomenon and provide a proper approach for prevention and treatment in line with those focused on evaluating the effective factors on Internet addiction.

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1. Introduction

A new type of addiction is witnessed by the widespread access to the Internet, i.e. Internet Addiction Disorder (IAD) which is specifically related to the Information Age. Internet addiction is a type of impulse control disorder that refers to the excessive Internet use in such a way that overshadows one's other social activities, leading to a performance decline in different professional, scientific, social, occupational, economic, psychological and family areas, as well as ignorance of real-life relationships among friends and family members. Just like other forms of addiction, Internet addiction is accompanied by symptoms like anxiety, depression, mood swings, impatience, obsessive thoughts or fantasizing about the Internet and breakdown of social relationships (Khatib Zanjani, & Aghahheris, 2015). Several types of research conducted on students show that the extent of Internet use as well as prevalence and spread of Internet Addiction is increasing (Chou, 2004). Internet addiction has gradually become a serious issue in public health worldwide. In the previous studies, the prevalence rates of Internet addiction had significant variance ranging from 0.8% to26.7% (Kuss et al., 2014, cited in Pan, Chiu, & Lin, 2020) depending on the measurement and target population. Mousavi (2020) conducted a study to investigate the prevalence of Internet addiction in Iranian adolescents and young people. The results indicated that the overall prevalence of severe Internet addiction is 2.4 %; 2.9 % for males and 2.2 % for females, and as far as age is concerned, 2.5 % for teenagers and 2.3 % for young people; however, the differences were not significant. In the two groups of females (2.2%) and males (2.9 %), there was no difference in terms of the mean score of Internet addiction, while a difference exists between the groups of teenagers and young people. In addition, the average Internet addiction in the youth age group (2.3 %) is slightly higher than that in teenagers (2.5%). Internet addiction among students is accompanied by several problems, including the decline of interpersonal relationships, anger and aggression (Kim, 2007). Considering the effect of Internet addiction on adolescents' psychological well-being, self-esteem is negatively correlated with Internet addiction, whereas depression and loneliness are positively correlated with Internet addiction. One of the most important questions regarding Internet addiction prevention and treatment concerns whether the occurrence of some personal traits leads to Internet addiction or not. Personality seems to deeply affect Internet use among factors related to Internet addiction (Batıgün, & Hasta, 2010, Liberatore, Rosario, Martí, & Martínez, 2011). In other words, intrapersonal factors can influence Internet users' behaviors and personality traits, such as shyness, subjectivism and social deprivation, have a close relationship with Internet addiction (Kesici, & Şahin, 2009). Young (2017) investigated the relationship between personality traits and Internet addiction. The results of his study on 259 Internet-addicted subjects indicated that they received low scores in self-confidence, emotional sensitivity, flexibility and adaptive behaviors.

Various theories have been proposed concerning human's personality structure and its formation including psychoanalytic,

trait and cognitive theories, some of which seek the main personality traits. Accordingly, different theorists discussed a number of personality factors, from 3 to 16. Cloninger's temperament and character traits theory are one of the proposed theories about personality (Kaviani, & Poor Naseh, 2005). Cloninger, Svrakic and Przybeck (1993) proposed a psychobiological theory, including four temperament and three character dimensions. Initially, the model included only three temperament dimensions, i.e. Novelty Seeking (NS), Harm Avoidance (HA) and Reward Dependence (RD). The temperament dimensions were assumed to be independently heritable and manifest early in development. Variation in each dimension was supposed to be associated with monoaminergic activity (Cloninger, 1986): NS with low basal dopaminergic activity, HA with high serotonergic activity, and RD with low basal noradrenergic activity (Stallings, Hewitt, Cloninger, Heath, & Eaves, 1996). These temperament dimensions are defined in terms of individual differences in behavioral learning mechanisms, explaining responses to novelty, danger or punishment and cues for reward (NS), avoiding aversive stimuli (HA), and reactions to rewards (RD) (Cloninger, 1987). Cloninger developed Tri-Dimensional Personality Questionnaire (TPQ) (Cloninger, 1987) to measure these dimensions. However, research conducted in TPQ has demonstrated that the former RD subscale `Persistence' proved to be relatively independent of the former three temperament factors and was proposed as an additional fourth temperament dimension. To more adequately represent individual differences, the four-dimensional model was extended to a seven-dimensional scheme, including three additional dimensions of character, i.e. Self-directedness (SD), Cooperativeness (CO) and Self-transcendence (ST). Self-directedness refers to the self-determination of the subject which is conceptually related to Rotter's locus of control construct. Cooperativeness accounts for traits characterizing the interpersonal circumflex (Wiggins, 1979, 1980) and the Self-transcendence dimension refers to the experiencing of spiritual ideas (Cloninger, Svrakic, & Przybeck, 1993). Cloninger assumes that character is less heritable than temperament, which matures with age.

Cloninger's model has been widely used in many types of research to investigate the relationship between this model and smoking (Noori Feshalenji, Pourshahbaz, Dolatshahi, Farhoudian, & Chamikarpour, 2012), alcohol, cocaine, benzodiazepine addictions (Schneider, Ottoni, Carvalho, Elisabetsky, & Lara, 2015) and drug abuse (Marquez-Arrico, López-Vera, Prat, & Adan, 2016). Only one study (Rezaii abdoly, & Nokany, 2014) is conducted on Internet users and the relationship between this model and Internet addiction has been analyzed. The statistical population of this study consisted of the youth Internet users in Khoramabad city and the sample included 229 subjects selected by multistage cluster sampling method. Young's Internet Addiction Test (Young, 1998) and Cloninger's Temperament and Character Inventory (Cloninger, 1994) were used for data collection. Their findings indicated that among temperament dimensions, only novelty seeking has the predictability of Internet addiction while self-directedness and cooperativeness character dimensions have the

predictability of Internet addiction. Additionally, novelty-seeking and cooperativeness were more predictive of Internet addiction than other variables. The study conducted by Pettorruso et al. (2020) showed that Young adults with problematic Internet use exhibited lower novelty seeking, harm avoidance, and reward dependence. Besides, Shafiee, Ashoouri, and Dehghani (2020) stated that the character dimension of self-directedness can reduce the adverse effects of insecure attachment and the risk of addiction to social network addiction.

Although some research has been conducted on the Cloninger's model of personality and Internet addiction, more research is still needed to clarify the predictive power of the Internet addiction model. Therefore, the present study aims to answer two questions: (1) "Is there is a relationship between this model and Internet addiction?" and (2) "How can this model explain Internet addiction?"

2. Methods

This study is descriptive-correlational. The statistical population consisted of all female students of Allameh Tabataba'i University studying in the academic year 2019-2020, and the sample included 150 subjects selected through the convenience sampling method.

The research materials consisting of online questionnaires were designed and posted on the researcher's Instagram. Then, the female students of Allameh Tabatabai University were asked to participate in this study by filling in Cloninger's Temperament and Character Inventory and Young's Internet Addiction Test. When 150 subjects completed the questionnaires, the sampling was over and then the data were analyzed by Pearson correlation test and multiple regression test (Enter and Stepwise).

The instruments used for data collection are as follows:

Cloninger's Temperament and Character Inventory: This inventory includes 125 items that should be completed with yes/no answers. Temperament and Character Inventory operates with seven dimensions of personality traits: four temperaments i.e. novelty seeking, harm avoidance, reward dependence, persistence and three characters, i.e. self-directedness, cooperativeness and self-transcendence. "Yes" coded as 1, "No" coded as 0. This test was first used by Kaviani & Pour Naseh (2005) in Iran and reliability coefficients reported for the Iranian version was as follows: novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, cooperativeness, and self-transcendence were 0.96, 0.91, 0.61, 0.76, 0.85, 0.95 and 0.88, respectively.

In the present study, the reliability of Cloninger's temperament and character questionnaire was 0.92.

Young's Internet Addiction Test (short form): Young developed his 20-item questionnaire based on diagnostic symptoms of Internet addiction. The total score of this test ranges from 20 to 100. Scores are interpreted as moderate (20-39), high (40-69) and severe (70-100) addiction (Young, 1998, cited in Zandavian, Heidari, & Bagheri, 2013). Some researchers (Windyanto & MacMurran, 2004) used

factor analysis and correlation coefficient to test the validity of this questionnaire. Factor analyses revealed 6 factors-such as salience, excessive use, neglecting work, anticipation, lack of control, and neglecting social life, showing good concurrent validity. Chronbach alpha was 0.90 in Kim et al.'s study (Kim et. al., 2010). Amiri (2018) investigated validation of the psychometric properties of the short version of Young's Internet addiction questionnaire. Furthermore, analyzing the collected data indicated the validity of this questionnaire, alpha coefficients 0.87 and 0.88, respectively for subscales of the lack of control/management time and desire/social problems. Besides, concurrent validity with the long form of Yang's Internet addiction was 0.89 ($p<0.01$), which has a significant positive correlation with subscales of the Bart Impulsiveness Scale ($p<0.01$), and negatively correlated ($p<0.01$) with Subscales of openness and agreeableness of Big Five personality traits' form. The results of exploratory and confirmatory factor analysis supported the factorial structure of the questionnaire. Yang's Short Form questionnaire of Internet addiction has good psychometric properties in Iranian society.

In the present study, the reliability of Internet addiction questionnaire was 0.89.

3. Results

In Table 1, the demographics characteristic of students is shown.

Table 1. Demographic characteristics of students

		Frequency	Frequency Percentage	
Educational level	Bachelor of science	71	47.3	
	Master of science	79	52.7	
	Total	150	100.0	
Marital status	Single	136	90.7	
	Married	14	9.3	
	Total	150	100.0	
Father's educational level	Illiterate	11	7.3	
	Under diploma	40	26.7	
	Diploma	63	42.0	
	Associates degree	18	12.0	
	Bachelor of science	11	7.3	
	Master of science	7	4.7	
	Total	150	100.0	
Mother's educational level	Illiterate	15	10.0	
	Under diploma	39	26.0	
	Diploma	75	50.0	
	Associates degree	7	4.7	
	Bachelor of science	11	7.3	
	Master of science	3	2.0	
	Total	150	100.0	
Age	Min	Max	Mean	Standard Deviation
	18	30	23.10	3.55

As Table 1 shows, more than half of the participants of the study were undergraduate students and most of them were single. Also, among the two variables of father and mother's education level separately, diploma had the highest frequency. The average age of students was 23.10 In the Table 2 frequency and frequency percentage of students regarding Internet addiction is presented.

Table 2. Frequency and frequency percentage of students regarding Internet addiction

Internet addiction	Frequency	Frequency Percentage
Moderate addiction	73	48.7
High addiction	77	51.3
Total	150	100.0

As shown, Internet addiction was at a moderate level in 48.7% of students and was at high level for 51.3% of students. No student showed the symptoms of severe addiction to the Internet.

Table 3 shows the mean and standard deviation of Internet addiction and Cloninger's dimensions among students.

Table 3. Mean and standard deviation of Internet addiction and Cloninger's dimensions among students

Variables	Mean	Standard Deviation
Internet addiction	40.60	12.303
Novelty seeking	9.41	3.188
Harm avoidance	8.66	4.484
Reward dependency	8.67	2.145
Persistence	2.71	1.494
Cooperativeness	15.59	3.535
Self-directedness	14.24	4.618
Self-transcendence	8.42	2.663

According to Table 3, the Internet addiction is 40.60 and among Cloninger's theoretical dimensions, the cooperativeness is the highest.

The assumptions of the multivariate regression analysis test were normality of variables and linear correlation relationship between them. Kolmogorov-Smirnov test was used for normality of the data. Statistic z in Kolmogorov-Smirnov test for Internet-addiction, novelty-seeking, Harm avoidance, reward dependence, persistence, cooperativeness, self-directedness and self-transcendence variables were obtained as 1.300, 1.401, 1.263, 1.110, 0.981, 1.012, 1.058, 1.130, and 1.324, respectively which is not significant at $p \leq 0.05$ level. This indicates the normality of variable distribution in the sample. In the Table 4, correlation matrix of research variable is shown.

Table 4. Correlation matrix of research variables

	Variables	Internet addiction	Novelty seeking	Harm avoidance	Reward dependency	Persistence	Cooperativeness	Self-directedness	Self-transcenden
Pearson Correlation	Internet Addiction	1.000							
	Novelty seeking	0.145*	1.000						
	Harm avoidance	0.180*	-0.059	1.000					
	Reward dependency	0.026	0.356**	-0.199**	1.000				
	Persistence	-0.349*	-0.149*	-0.132	-0.022	1.000			
	Cooperativeness	-0.038	0.226**	-0.216**	0.410**	-0.048	1.000		
	Self-directedness	-0.261*	-0.305**	-0.594**	-0.266**	0.252**	-0.118	1.000	
	Self-transcendence	-0.015	0.144*	-0.466**	0.448**	0.299**	0.185*	0.085	1.000

As shown, a significant positive correlation exists between novelty-seeking and harm-avoidance and Internet addiction, and there is a significant negative correlation between persistence and self-directedness. In addition, the table results indicated that there is a positive significant correlation between reward dependency and cooperativeness and novelty-seeking ($\alpha<0.05$). Additionally, there is a negative correlation between persistence and novelty-seeking ($\alpha<0.05$) and a significant negative correlation between self-directedness and novelty-seeking ($\alpha<0.01$). However, there is a negative significant correlation between reward dependency and cooperation, self-directedness and self-transcendence and harm avoidance ($\alpha<0.01$) Furthermore, there is a significant positive correlation between cooperation and self-transcendence and reward dependency and a significant negative correlation between self-directedness and reward-dependency ($\alpha<0.01$). Besides, there is a significant positive correlation between self-transcendence and cooperation ($\alpha<0.05$). In Table 5 the results of multivariate regression analysis (enter method) for prediction of Internet addiction through dimensions of Cloninger's personality theory are presented.

Table 5. the results of multivariate regression analysis (enter method) for prediction of Internet addiction through dimensions of Cloninger's personality theory

No.	Predictive variable	Unstandardized Coefficients β	Standardized Coefficients β	T	P
1	Constant value	46.121		3.929	0.000
2	Novelty seeking	0.305	0.079	0.923	0.358
3	Harm avoidance	0.371	0.135	1.111	0.268
4	Reward dependency	-0.438	-0.076	-0.768	0.444
5	Persistence	-2.924	-0.355	-4.232	0.000
6	Cooperativeness	-0.215	-0.062	0.723	0.471
7	Self-directedness	-0.297	-0.112	-0.945	0.346
8	Self-transcendence	0.916	0.198	1.966	0.051
	F= 4.648	R^2= 0.182	P=0.000		

As shown in the above table, among 7 dimensions of Cloninger's personality theory, persistence (β=-0.355) could explain 18.6% of the variances of Internet addiction among students. In addition, stepwise regression analysis was done for the prediction of Internet addiction, the results of which are presented in Table 6.

Table 6: the results of stepwise multivariate regression analysis for prediction of Internet addiction through dimensions of Cloninger's personality theory

step	Predictive variable	Unstandardized Coefficients β	Standardized Coefficients β	T	P	R^2	ΔR^2	F	P
1	Persistence	-2.874	-0.349	4.532	0.000	0.122	----	20.538	0.000
2	Self-directedness	-.493	-0.185	-2.359	0.020	0.154	0.032	13.369	0.000

As shown above, among 7 dimensions of Cloninger's personality theory in the first step, persistence (β= -0.349) could predict 12.2 of variances of Internet addiction. Self-directedness was added to the prediction model at the second step which increased the explained variances of Internet addiction up to 15.4% of which 3.2% accounts particularly for self-directedness.

4. Discussion

This study aimed to predict Internet addiction based on Cloninger's temperament and character dimensions among female students of Allameh Tabatabaie University. The results showed that 48.7% and 51.3% of students had moderate and high Internet addiction, respectively, none of which was severe. Comparing these results with previous studies (Nasrollahi et al., 2015, Solhi, Armoon, Shojaeizadeh, & Haghani (2014), Vahabi, Vahabi, Rajabi, Taifuri, & Ahmadian, 2015) indicates that Internet addiction has an increasing trend that can lead to serious risks and damages of mental health and other Internet-addiction-related harms among students and even the whole society, for which some measures should be taken to resolve this issue.

Similarly, it was found that Internet addiction increases in students as novelty seeking and harm avoidance levels increase. In contrast, higher persistence and self-directedness decrease their Internet addiction. High scores in novelty-seeking indicate one's quick mood change, emotional behaviors and impulsiveness.

Subjects with high scores in novelty-seeking have features like exploratory excitability, being excited by novel stimulations, avoidance from frustration, creativity, quick-tempered, insistence on change, susceptibility to absent-mindedness, wasteful, and active and risk-seeking but they avoid regularity. In contrast, people with low novelty-seeking scores are rigid, slow-tempered, conditional, being more prone to repeat previous experiences, showing the disciplined way of working, and parsimonious both in time and money. These people are change-seeking, bored

very quickly, impulsive and disordered. Moreover, it can be said that novelty-seeking people often tend to do exploratory activities, be excitement seeker and against regularity and want to experience novel things (Ko et al, 2006, ko et al, 2010). Individuals with high novelty seeking readily engage in new activities but tend to neglect details and are quickly distracted or bored. Internet activities, especially online games, provide a highly varied virtual environment that satisfies the adolescents' novelty-seeking needs. Adolescents with high novelty seeking might engage in Internet activity with higher motivation and arousal responses. Therefore, high novelty-seeking may predispose an individual to heavy Internet use. This is similar to the effect of high novelty seeking on substance use experience (Ko et al, 2006). A high positive correlation between novelty-seeking and Internet addiction is explainable considering students' monotone lifestyle, low stimulus environment, lack of facilities, lack of attractiveness and various activities.

People with high harm avoidance experience a broader range of negative emotions more intensively (Cloninger, 2000). Based on Cloninger's viewpoint, harm avoidance is a heritable trait found to be an underlying factor of anxiety, depression and anger. However, researchers have shown that the features like shyness, impulsiveness, loneliness, anxiety, depression, neurosis features, anger and hostility, deprivation, embarrassment, stress-vulnerability are effective traits of Internet addiction. Indeed, this excessive experience of negative emotions (anger, anxiety, and depression) explains the level of Internet addiction and its continuance among students. These people do not have any behavioral inhibitor and suffer from several interpersonal problems, because they seek for virtual world and excessive use of the Internet to escape from these problems. Such people are pessimist and worry about predicting events, more fearful from uncertainty, indifferent to problems, experience more social inhibition, fatigue and weakness and show higher levels of Internet addiction. Harm avoidance is thought to reflect variation in the brain's punishment, or behavior inhibition system, which includes the sept hippocampal system, with serotonergic projections from the raphe nuclei in the brain system. Individuals with low harm avoidance are confident, optimistic, carefree, uninhibited, and energetic. High harm avoidance inhibits risk behavior with negative results. High harm avoidance predicts Internet addiction. Since Internet provides an anonymous virtual world and individuals usually perceive less responsibility and harm from it than they do in the real world, online disinhibition effect may relax individual with high harm avoidance in real life and make them vulnerable to Internet addiction (Ko et al, 2006)

Furthermore, the results of enter method regression (Table 5) showed that the persistence scale could explain 18.6% of variances of Internet addiction among students. Besides, the results of stepwise regression (Table 6) showed that persistence could explain 12.2% of variances of Internet addiction at the first step and this amount increased up to 15.4% after introducing self-directedness. This means that self-directedness accounts, particularly for 3.2% of variances of Internet addiction, which is consistent with the study of Hahn, Reuter, Spinath, and

Montag (2017). To explain these findings, the persistence scale in Cloninger's theory originates from individual differences in the mental system for regulation of alternative reinforcement in such a way that the signals of alternative punishments change to the signals of potential rewards, expecting that one continues its tasks. Diligence, continuity in practice despite pressure, being pioneered to do the task, compatibility in unexpected conditions and challenges in front of difficulties are general features of people with high scores on this scale. Indeed, these traits help diligent people to make life challenges more controllable and take them as an opportunity for learning and purposefully cope with problems rather than escape or avoid them. Those who are precise, plan for tasks, are diligent and try to progress definitely, cannot none-purposefully waste long hours surfing on the Internet (Khanjani, & Akbari, 2011). As mentioned above, this scale had the most predictability of Internet addiction among other scales, while people with higher persistence are more capable of self-control and self-regulation to enter the virtual world and its non-addictive use (Kaviani, & Poornaseh, 2005). To explain these findings, those with high self-directedness have more self-acceptance, less self-blame, are responsible and resourceful (Cloninger, & Svrakic, 2005) and have more solutions for managing their mental pressure and negative emotions. However, they are likely to show more self-regulation about Internet use and have more maturity and capability to coherence and govern their personal life.

Comparing similar studies on other disciplines and Universities' students with this study can be useful. To better explain the relationship between Cloninger's theory and Internet addiction more studies can be conducted on none-student populations. Moreover, the sample group consisted of only female students. It is recommended that more studies be conducted taking into account the gender to make the results more generalizable.

5. Conclusion

The results of the present study indicated that students with high novelty seeking are more prone to Internet addiction. Therefore, it is suggested that the students' novelty-seeking feature be directed by performing careful planning; hence, their internet addiction is prevented. In addition, it was found that the caution and behavioral inhibition of the students with high harm avoidance are affected when exposed to cyberspace, and their Internet addiction increases. Therefore, it is suggested that universities try to increase students' media literacy and subsequently prevent Internet addiction. The results showed that self-directedness and harm avoidance are negatively related to Internet addiction, which can predict Internet addiction among students. Such results can be useful for higher education system planners in teaching strategies to increase student self-directedness and persistence.

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Conflict of Interest

The author declares that there is no conflict of interest.

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