



## Investigating the relative contribution of brain-behavioral systems in the marital satisfaction of married women in Urmia, Iran

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### Abstract

**Background & Aims:** Marital satisfaction and the related factors are some of the issues raised in psychology and family. The present study was performed with the purpose of investigating the relative contribution of brain-behavioral systems to the marital satisfaction of married women in Urmia City.

**Materials & Methods:** This cross-sectional (descriptive-analytical) study was performed on 220 married women living in Urmia, selected through cluster sampling. In addition to the demographic variables questionnaire, the Kansas Marital Satisfaction Scale (KMSS) and Behavioral Inhibition/Activation Systems Scale (BIS/BAS) were used to collect data. Data were analyzed using SPSS version 21 statistical software and descriptive statistical tests (mean and standard deviation, frequency and percentage), and analytical methods (Pearson correlation coefficients, multiple linear regression) at a significance level of  $p \leq 0.05$ .

**Results:** Behavioral inhibition/activation systems have a significant effect ( $\beta = 0.388$ ) on marital satisfaction, and the fitness indices of the model showed the adequacy of the presented model, and marital satisfaction has a negative relationship with age, duration of marriage, and spouse's employment. There was a positive relationship between the age of marriage, the couple's education level, the spouse's illness, and leisure time.

**Conclusion:** The results of this study indicate that the brain-behavioral system is the most significant contributor to marital satisfaction and plays an essential role in improving relationships between couples. Therefore, it is recommended that psychologists pay attention to the importance and impact of these variables in the treatment and promotion of couples' marital satisfaction in counseling and awareness programs.

**Keywords:** Brain-behavioral system, Marital satisfaction, Married women

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## Introduction

Family is a natural social system that includes at least three generations of relationships. The relationship between the members of these subcultures is deep and multi-layered, which is mainly based on common history, common and internalized perceptions, and assumptions about the world, and common goals. In such a system, people are connected to each other by strong, lasting and mutual interests and emotional attachments (1). Marital satisfaction can maintain family relationships, which means the compatibility of marital behaviors of couples with each other and the existence of understanding, empathy, and love between them (2). Lack of satisfaction between spouses leads to a decrease in mental health, a decrease in life satisfaction, and problems in their social interactions (3). Zare et al. also reported that marital satisfaction is an individual experience in marriage that people evaluate according to the level of happiness in their married life, they believe that this depends on the expectations, needs and desires of people in their marriage. Marital satisfaction refers to the level of satisfaction between couples in their relationship (4). Factors influencing marriage include ideal distortion, personality issues, communication, conflict resolution, financial management, leisure activities, sex, children and parenting, family and friends, egalitarian roles, and religious orientation (5).

Greeff showed that marital satisfaction is one of the most important criteria for the healthy functioning of the family institution. Marital satisfaction is a process that is achieved during a couple's life, and it requires the adaptation of tastes, the recognition of personality traits, the creation of behavioral rules, and the formation of relationship patterns (6). Finally, one of the most important aspects after the formation of the marital system is the satisfaction that spouses experience in marriage (7). Broman reported that 80% of married couples in Michigan are satisfied with their marriage, and 79% of respondents showed high satisfaction with their marriage. Almost all couples reported high marital satisfaction in the early stages of their relationship (8). African Americans also

expressed high marital satisfaction during cohabitation (9). Also, studies have shown that traditional couples have higher marital satisfaction than other types (10). Mustafa et al. found out that Malay couples in traditional marriage displayed the highest marital satisfaction, while Chinese and Indians couples living in Malaysia expressed the highest marital satisfaction in non-traditional marriages (11).

In Iran, different studies have been performed in the field of marital satisfaction, yielding different results. Mokhtari et al. showed that the marital satisfaction of women in Yasouj is at an average to high level (12), while the average marital satisfaction of Kashani women is low (13). Ismailpour in Tabriz city showed that men are more satisfied with their married life compared to their wives (14) and this is in line with the results of most of the previous studies, which reported that there is no difference between the marital satisfaction of men and women.

Satisfaction with married life affects the relationship between parents and children. This relationship affects the personal and mental health of children, the health of couples, and the health of the family. Spouses who have good communication quality or understanding also benefit from better health status (15). Marital satisfaction is actually a positive and enjoyable attitude that women and men have towards various aspects of their marital relationships, while marital dissatisfaction is a negative and unhappy attitude towards various aspects of marital relationships that even affects their quality of life (16). Marital satisfaction has a major effect on the durability of a marriage, and it refers to the extent to which married people examine conflicts and come to terms with each other. Therefore, it should be noted that the ability to cope with the other person is influenced by many factors, which also influence marital satisfaction (17).

Marital satisfaction can be examined within the framework of reinforcement sensitivity theory, which is a biological and motivational-emotional approach in the field of personality. Rezvanhasanabad et al. showed that the behavioral activation system (BAS) does not have a significant relationship with marital satisfaction,

but the behavioral inhibition system has a significant negative relationship with marital satisfaction (18) which is also consistent with Pourmohsani's study (19).

The behavioral inhibition system is no longer considered to be responsible for reacting to conditioned negative stimuli, but it is generally responsible for resolving conflicts in the goal. Goal conflicts can appear in situations such as rewards and threats. If the reward is greater than the risk, the behavioral inhibition system will resolve the conflict by using the BAS and controlling the fight-flight-freeze system, leading to the process of approaching the desired goal. If the threat is greater than the reward, the behavioral inhibition system activates the fight-flight-freeze system and inhibits the BAS, leading to avoidance (18). Research has shown that there is a correlation between brain systems and sexuality. Couples who use their activation system more tend to experience more positive emotions during sex, which leads to a more intimate marital relationship. On the other hand, when people enter a relationship with an active inhibition system, they are more likely to experience negative emotions and higher conflict levels. This, in turn, results in decreased satisfaction. Researchers have emphasized that sexual satisfaction plays a crucial role in marital satisfaction (20). Generally, it can be said that the behavioral inhibition system helps to increase marital satisfaction when goal-based conflicts occur. Therefore, considering the balanced functioning of the family and preventing its disintegration; knowing the effective factors in marital relations, controlling and managing it as a basis for strengthening family life, is one of the valuable methods in solving marital problems. Knowing these factors helps couples to create, strengthen, or modify these variables and achieve marital satisfaction by getting to know these factors. Factors related to marital satisfaction are essential and are the foundation of strengthening family life. It can be expected that with the increase of marital satisfaction, many psychological, emotional, and social problems of families and society as a whole will be reduced. According to the mentioned cases, in this

research, the relative contribution of brain-behavioral systems in marital satisfaction has been investigated.

## Materials & Methods

This is a descriptive, analytical, cross-sectional, and correlational study. In this research, we tried to investigate the relationship between BIS and BAS variables with marital satisfaction and the relative contribution of brain-behavioral systems in predicting marital satisfaction.

### Sampling and Implementation:

The statistical population of the present study was all married women covered by comprehensive health centers in Urmia in 2022. According to Dadu et al., the statistical confidence level is 95%, the power of the test is 80%, and using the formula to determine the sample size in correlation studies, 199 people were required. Considering a 10% attrition, the sample size was estimated to be 220 people.

$$= \left[ \frac{1.960 + 0.85}{0.2027} \right]^2 + 3 = 199n = \left[ \frac{Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}}{c} \right]^2 + 3$$

Confidence Limit of Correlation Factor:

$$c = \frac{1}{2} \ln \left[ \frac{1+r}{1-r} \right]$$

The study participants were selected using a multi-stage cluster sampling method. In Urmia, the comprehensive health centers were divided into two regions. First, a list of comprehensive health service centers in each district was prepared. Then, one comprehensive health service center was randomly chosen from each district. In the next stage, the researcher randomly selected 110 married women from the electronic files available in each comprehensive health center.

The criteria for entering the study included the individual's willingness to participate, physical and

mental health, living in Urmia city, and married women. The criteria for exiting the study included leaving the daily service program of the comprehensive health center due to acute illnesses and death. The physical and mental health status of the studied women was available in the health center file, and there was a detailed report of their physical and mental problem. Before asking the questions and while explaining the purpose of the research, the subjects were assured that the questionnaire information would remain completely confidential. They were informed that participation in the study was completely voluntary.

#### Tools:

In the present study, a demographic questionnaire was used to measure the characteristics of participants, and the KMSS scale was used to measure marital satisfaction. This scale is a 3-question questionnaire that measures marital satisfaction. The minimum possible score is 3, and the maximum is 21. A score between 3 and 7 indicates a low level of marital satisfaction, a score between 7 and 14 indicates an average level of marital satisfaction, and a score above 14 indicates a high level of marital satisfaction. Despite being short, the Kansas Marital Satisfaction Scale (KMSS) has an excellent internal consistency with an alpha coefficient of 0.93 (21).

Carver and White's Behavioral Inhibition/Activation Systems Scale (BIS/BAS) was another tool, which contains 24 self-report questions. This questionnaire includes seven BIS scale items that

measure the sensitivity of the behavioral inhibition system in response to threats. Additionally, the BAS subscale includes 13 items that evaluate the sensitivity of the BAS. This questionnaire consists of three subscales: driving (4 questions), responding to rewards (5 questions), and seeking entertainment (4 questions). The items are rated on a 4-point scale by the subject. In this tool, each statement has a 4-point response scale ranging from completely disagree to completely agree. In the present study, the reliability of the scale was estimated using Cronbach's alpha of 0.793. Written permission was obtained from the Research Council and Ethics Committee of Tehran University with the code IR.UT.PSYEDU.REC.1401.060 to carry out the present study.

In order to analyze the data in this research, SPSS21 software was used at a significant level of 0.05. Descriptive indexes of the research variables, including central and dispersion indexes such as mean, minimum, maximum, and standard deviation, were employed. Pearson correlation and multiple linear regression were used for inferential index. Stepwise regression analysis was used to investigate the role of brain-behavioral systems in predicting marital satisfaction. Brain behavioral systems were included in the analysis as a predictor variable and marital satisfaction as a criterion variable.

## Results

Table 1 shows the average and standard deviation of the demographic characteristics of the participants.

**Table 1.** Demographic characteristics of married women.

Variables	Minimum	Maximum	Mean $\pm$ SD
Age	19	60	36.32 $\pm$ 8.82
Age of marriage	12	40	22.09 $\pm$ 5
Duration of marriage	1	40	14.35 $\pm$ 8.76
Age of spouse	24	67	41 $\pm$ 8.82
		Frequency	Percent
Job	Employed	83	37.7

	Housewife	137	62.3
	Tenant	52	23.6
Living place	Owner	129	58.6
	With family	39	17.7
	High school	88	40
	Diploma	65	29.5
Education level	Bachelor	45	20.5
	Masters	15	6.8
	Ph.D.	7	3.2
	Turkish	201	91.4
Race	Kurdish	15	6.8
	Fars	4	1.8

According to Table 2, marital satisfaction has a significant relationship with the age variable ( $r = -0.16$ ) at the level of 0.05, which means that marital satisfaction decreases with increasing age. Also, the age of marriage has a positive relationship with marital satisfaction; as the age of marriage increases, marital satisfaction increases ( $r = 0.151$ ). There was no relationship between marital satisfaction with the type of acquaintance, woman's occupation, and the number of children. The negative relationship between marital satisfaction and marriage duration means that marital satisfaction decreases with the increase of marriage duration ( $r = -0.213$ ). Marital satisfaction was not related to the type of residence. And the positive relationship between marital satisfaction and education level shows that with the increase in education level, marital satisfaction also increases ( $r = 0.179$ ). Also, the negative relationship between marital satisfaction and spouse's age indicates that marital satisfaction decreases with increasing spouse's age ( $r = -0.163$ ), and the negative relationship between the two variables of marital satisfaction and spouse's job indicates that marital satisfaction decreases with spouse's unemployment ( $r = 0.163$ ). The negative relationship

between the two variables of marital satisfaction and spouse's job indicates that marital satisfaction decreases with spouse's unemployment ( $r = -0.240$ ). Marital satisfaction is not related to the woman's ethnicity, but it has a positive relationship with the husband's education level, that is, with the increase in the husband's education level, the level of marital satisfaction also increases ( $r = 0.188$ ). Marital satisfaction is not related to the wife's ethnicity and religion, but it has a positive relationship with the woman's illness, that is, despite the disease, marital satisfaction increases ( $r = 0.262$ ). With the increase in the use of virtual space, marital satisfaction decreases and there is a negative relationship between these two variables ( $r = -0.172$ ). Having siblings and spouse's religion have no effect on marital satisfaction. The women's free time has a positive effect on marital satisfaction ( $r = 0.182$ ), and a spouse's illness has a positive relationship with women's marital satisfaction ( $r = 0.174$ ). Based on the results of Table 3, the factor of inhibition/behavioral activation systems ( $\beta = 0.388$ ) has a significant effect on marital satisfaction, as well as the fit indicators of the adequacy model of the presentation model.

**Table 2.** Correlation coefficient between marital satisfaction and demographic characteristics of married women.

Variables	Marital satisfaction
Age	-0.16*
Age of marriage	0.151*
Type of acquaintance	0.098
Women's occupation	0.019
Number of children	-0.071
Duration of marriage	-0.213**
Type of residence	-0.027
Education level	0.179**
Spouse's age	-0.163*
Spouse's job	-0.240**
Woman's ethnicity	0.107
Husband's education level	0.188**
Husband's ethnicity	0.002
Women's religion	0.031
Woman's illness	0.262**
Use of virtual space	-0.117
Having a brother	0.011
Having a sister	-0.07
Women's free time	0.182**
Spouse's religion	0.009
Spouse's illness	0.174**

\*\* $p < 0.01$  \* $p < 0.05$

**Table 3.** The relative contribution of behavioral inhibition/activation systems variables in explaining married women's marital satisfaction

Model	B	Std. Error	Beta	T	sig	Upper bound	Lower bound
1 Total system	0.388	0.01	0.931	37.713	0.0001	0.409	0.368

$R = 0.93$ ,  $R^2 = 0.87$ ,  $R \text{ square Change} = .826$ ,  $\text{Adjusted } R = 0.866$ ,  $F = 1422.24$ , ( $df_1 = 1$ ,  $df_2 = 219$ )

## Discussion

According to the purpose of the present study, based on the relative contribution of behavioral activation and inhibition systems variables, it is shown that behavioral activation/inhibition systems have a

significant effect on marital satisfaction. In this context, Nasiri et al. showed that among the components of the behavioral brain system, the active inhibition system (reward) and the fight-flight system (punishment) have the strongest effect on marital

satisfaction. In this way, the fight-flight system has an inverse relationship with active inhibition and a direct relationship with marital satisfaction (22). In the research of Rezvanhasanabad et al., the BAS (with the coefficient  $\beta = -0.25$ ) and the BIS (with  $p > 0$ ,  $B = -0.42$ ) were significant predictors of marital satisfaction. Therefore, based on the given results, it is emphasized to pay attention to the predictive role of these two variables on marital satisfaction (23). Moreover, the study of Koluri also showed that marital satisfaction with the BAS has positive correlations. And, marital satisfaction was negatively related to the BIS. Also, the BAS positively predicted marital satisfaction, and the behavioral inhibition system negatively predicted marital satisfaction. Findings were discussed in terms of Gray's reinforcement sensitivity theory. These results can be helpful in designing enrichment preventive programs and therapeutic interventions for couples (24). The results of another study indicated that the BIS is effective in marital satisfaction, and the inhibition system has a negative and meaningful relationship with marital satisfaction. Additionally, the activation system significantly impacted marital satisfaction. These findings suggest that the behavioral activation and inhibition system can predict marital satisfaction directly. Consequently, it is recommended that experts in the field of family examine these structures to promote marital satisfaction among couples (20).

According to the results of the present study, based on the relationship between demographic variables and marital satisfaction, the findings of the present study reported a negative relationship between age and marital satisfaction, that is, with increasing age, marital satisfaction also decreases, which is not consistent with the results of Jalali et al. They showed that the inverse age difference has no effect on the marital satisfaction of married people. In other words, the inverse age was not recognized as the only main and significant factor affecting marital satisfaction (25). Similarly, Dabone reported that age has no effect on marital satisfaction, in the sense that there is no significant difference between young and old couples in terms of the level of

satisfaction with their marriage, and the only difference in the marital satisfaction of these people is the level of their commitment (26).

The spouse's age was a factor that had a positive relationship with marital satisfaction in the present study, and the results showed that the age of marriage has a direct relationship with marital satisfaction, which is consistent with the study of Haghigian et al. (27). Based on this, Sayadpour showed that the age of the spouse and the age difference with the spouse have an effect on the level of satisfaction with marriage. More age difference due to the creation of different physical, emotional, and social space for each couple limits the possibility of participation and emotional closeness of people to each other and reduces their satisfaction with marriage (28).

In the current research on marriage age, consistent with Azami's findings, there is a positive and significant relationship between marriage age and marital satisfaction of couples (29). Valadkhani et al. also concluded that women who got married at the age of less than 24 years have a lower quality of marriage than women who got married at the age of 24 years. It seems that women who get married at an older age have more cognitive-emotional-communicative development and choose a spouse based on more correct criteria. It is clear that these factors cause these women to have more marital quality compared to those who get married at a young age (30).

The results of the present studies show that there is no relationship between job and marital satisfaction. Farajipak's research findings reported different results. According to Farajipak, women's job has a positive and significant effect on marital satisfaction, that is, the average amount of marital satisfaction of working women is more and higher than the marital satisfaction of housewives (31). Also, in Sadegh Moghadam's research, the findings showed a significant relationship between satisfaction with married life and the job of women and their husbands. According to the research results, there was no statistically significant difference between the job satisfaction of women and their husbands in this regard (32). However, the results of

the study by Mutaui et al. showed that there is no significant difference between the average marital satisfaction of employed and non-employed women (33). Also, in the study of Tahmasebi et al., there was no significant statistical difference between working and non-working women in terms of marital satisfaction, which is consistent with the results of the present study (34).

In the present study, the husband's employment had a negative relationship with marital satisfaction, that is, with the wife's unemployment, marital satisfaction decreased. In this context, Fox et al. showed that the husband's job insecurity has a high positive correlation with women's reports of marital conflicts (35). Regarding unemployed men with no income, it can be said that generally when couples are constantly worried about money, they will be less satisfied and marital satisfaction is related to job satisfaction (36). Previous researches show that compared to employed workers, unemployed workers have less harmony, communication and coordination in family relationships and also have more tense relationships. However, on the one hand, unemployment is negatively related to marital and family satisfaction, and on the other hand, to changes in marital happiness (37).

The present results showed that there is no relationship between the number of children and marital satisfaction. Carr believes that the high amount of marital satisfaction is seen before giving birth to children and after they leave the home, and the lowest amount is when the children go to school (38). This implicates the pressure imposed by children on parents; A pressure that leads to a decrease in marital satisfaction. According to Berchler's theory, marital satisfaction is not a constant thing, thus, in the early years of marriage, satisfaction is significantly high, and then with the birth of a child, this satisfaction decreases. It increases when all children have left home and couples are approaching their middle age and old age (2).

Of course, paying attention to the role of children in the level of satisfaction with marriage brings us to the

results of studies that show that the existence of children plays an effective role in the stability of marriage and increases the desire to prevent the disruption of marital relations. However, children's characteristics, such as their gender and age, do not have a significant effect on marital life satisfaction, while the appropriate number of children plays an effective role in marriage satisfaction (28).

In the present study, there is a negative relationship between years of marriage and marital satisfaction, that is, as the number of years of marriage increases, women's marital satisfaction decreases accordingly. This finding is not consistent with the findings of Hosseini Sadeh and Fatehi. They believe that there is a significant relationship between the duration of marital life experience and marital satisfaction, which can be concluded as follows: people who have more duration of life experience have higher marital satisfaction than people who have lower duration. Therefore, according to these results, couples who spend the first years of married life have more adjustment problems. It is possible that in the first years of life, because the spouses are not familiar with the real expectations, needs, desires, personal interests, and generally, each other's main character, they may cause problems that this unfamiliarity itself is possible (39). Sayadpour says, in his study, there was a significant relationship between the years of life together and the level of satisfaction with marriage, and people whose experience of living together was less than two years stated that they were most satisfied with their marriage (28). It can be said that because the couples were spending the first years of their lives, the years that are the least dangerous period of married life based on the stages of family development. Actually, the attractiveness of joint life and the idealism of couples in the early years of their life together prevent the spouses from directly confronting the undeniable and sometimes conflicting realities of life, increasing marital satisfaction during these years. Therefore, according to the results of previous research, the high level of marital satisfaction in couples who spent the first years of their life together and often had no



children can be justified. Also, Quraysh et al. showed that the lowest level of dissatisfaction was in the 10 to 14 years old group, and the highest level of dissatisfaction was in the two groups with a common life period between 15 years and more, and then in the 1 to 4 years group. In other words, the level of dissatisfaction was higher in the early years of cohabitation or after longer years of cohabitation (40). In fact, according to this opinion, we see that as the first years of marriage pass, the level of satisfaction decreases. Couples face changes in each stage of their lives, and if they cannot adopt appropriate solutions to face these changes, this will leave bad and destructive effects on the relationship with their spouses.

Fowers et al. also show a greater sense of satisfaction in couples who have been married for a longer period of time. Although these researchers based the results on the basis of people's transition from the initial critical stages of life, compromise with new life conditions, acceptance of sharing in life, and achieving more stability and strength in relationships is justified and evident from the age conditions and the correspondence between their findings and the level of marital satisfaction during the life cycle (41). Sanaei also states in confirmation of Fowers that the more time passes after marriage, the marital satisfaction increases (42). Of course, according to Wenner's belief, marital satisfaction is related to various variables, in such a way that this relationship undergoes changes over time and during the years after marriage. Developments that find a special meaning and concept in physiological, psychological, cultural, or other contexts and can be interpreted in their own fields (43).

In the present study, there is no relationship between marital satisfaction and dating style for marriage. In this context, the study of Jawaheri et al. had similar results and showed that there is no significant difference in marital satisfaction between couples with traditional and non-traditional marriages (44). However, Mazaheri et al. showed that based on the evolutionary study of marriage styles and marital compatibility, the compatibility score of women who got married through their own and family's consent and

"acquaintance and marriage with the consent of their families" in the first years of marriage is higher than two groups of compulsory marriages, and with the passage of time, this superiority is still maintained despite its fluctuations. Meanwhile, women who reported their marriage style as "getting in love and marriage despite family opposition," although in the first years of their marriage, marital satisfaction has shown a high level compared to the above two groups, but as more years of marriage pass, their marital compatibility score drops more (45).

In another study, there was a significant relationship between the type of marriage and marital satisfaction in such a way that less satisfaction was reported in family and acquaintance marriages compared to friendship type (46). According to the study of Khan Mohammadi et al., there is no relationship between the level of marital satisfaction according to the marital style (47).

In the current study, the level of education has a positive relationship with the level of marital satisfaction. In this regard, the study of Khan Mohammadi et al. showed that the average level of marital satisfaction according to education has a statistically significant positive difference (47), but Ghofranipour et al. indicated that there is an inverse relationship between women's marital satisfaction and the level of education, in other words, as education increases, women's satisfaction decreases (46).

The results of the present research indicated that there is no relationship between the type of religion and marital satisfaction, perhaps because Sunnis and Shias have been living together for many years, and there is a cultural similarity between them. However, another study in Qom indicated that there is a positive correlation between religious orientation and marital satisfaction. This means that religious orientation can predict marital satisfaction (48). Also, in their study, Moslehi et al. showed that religious couples had more marital satisfaction than couples in which only one of them adhered to religion, and couples who did not adhere to religion were less satisfied (49). Call and Heaton concluded that the greater the religious

difference between couples in beliefs and behaviors, the more dissatisfied they are with their marriage (50).

In the present study, there was no correlation between ethnicity and marital satisfaction, as Sadeghi et al. also showed that ethnic differences do not have a significant effect on marital satisfaction (51). Hadavand also reported that there is no significant difference between the Kurds, Persians, Lors, and Turks in terms of marital satisfaction. It seems that industrialization, urban development, education, communication, and media have integrated Iran's multi-ethnic communities and reduced ethnic differences and distinctions (52). But it was showed that the level of marital satisfaction of Iranian women married to foreigners is lower compared to women married to Iranians (53).

In the present study, the findings indicated that the illness of couples has a positive and significant effect on their marital satisfaction, which is consistent with Padash et al. (54). Also, it was demonstrated that marital satisfaction in women whose husbands were diagnosed with schizophrenia is lower than in the control group. That is, the responsibility of life among women with a spouse suffering from schizophrenia and mental stress causes a decrease in the quality of life and dissatisfaction with the married life of this group (55). Also, in another study, it was found that the majority of cancer patients are not satisfied with their married life (56). But there is no significant difference between the marital satisfaction of women with diabetes and normal women. In women with diabetes, their disease cannot cause them to experience less marital satisfaction compared to healthy people. Although in explaining the difference in the marital satisfaction of women with diabetes, it can be said that chronic diseases are seen as an unfortunate event in life that can change the way the family reacts and interacts (57).

In the current research, no relationship was observed between the use of virtual space and marital satisfaction, but according to the research from Mahdizadeh, three variables of inappropriate use of virtual space, family boundaries, and marital satisfaction predict 36% of the variance of emotional

divorce through the tested path. This means that improper use of virtual space causes damage to family boundaries, and damage to family boundaries causes a decrease in marital satisfaction, and the result of a decrease in marital satisfaction is emotional divorce in couples (58). In Dew and Tulane's study, negative relationships between the use of media and marital quality of husband and wife appeared (59). Also, research results in Kashan have shown that the amount of use of social networks and the virtual world has a significant effect on the marital satisfaction of couples aged 30 to 45 in this city (19). Also, research results in Bafgh city showed that the level of marital satisfaction of people who are members of social networks is lower than that of people who are not members of these networks, and membership in social networks causes a decrease in marital satisfaction in the long term (60).

In the results of the present study, having a sibling had no relationship with marital satisfaction, but the research results show that the feeling of belonging to the family as well as participation in family decisions play an effective role in increasing marital satisfaction. Montazeri says that the results of studies on the components of happiness among Iranian families show that spouses' families, as one of the appropriate background components, can play a role in the happiness of a couple's life, and establishing a strong bond between spouses and the spouse's family is one of the most important requirements for marital compatibility and satisfaction in Iran. Actually, about a third of marital satisfaction from couples is covered by the quality of their interactions with two families, which is considered a significant statistic in its place (61). Belyad et al. showed that there is a positive correlation between the role of the main family and marital conflicts. The more healthy relationships are established in the communication patterns of the main family, the more conflicts of couples decrease, and on the other hand, their satisfaction increases (62). Also, relatives act as a barrier against stressors (63).

In the current study, marital satisfaction had no relationship with the type of residence, as Jahromi et al. also reported that there is no significant difference

between the scores of marital satisfaction based on the place of residence, the type of house, in terms of the average level of marital satisfaction (64). But in this context, Fathi et al. stated that the place of residence had an effect on the marital satisfaction of Tehran residents, which is not in line with the results of the present study (65). Another study reported about the difference in average marital satisfaction based on the variables of the residence status and independence of couples in terms of place of residence, the results of the one-way variance test showed that there was no significant difference between the scores in their level of satisfaction with married life (66).

By conducting various studies on leisure time and marital satisfaction, the researchers achieved interesting results, showing that there is a significant positive relationship between the above variables. Nolsen performed a study on 116 married couples (67) and showed that the more couples have satisfying time in their free time, the more their marital satisfaction will increase. In this regard, Johnson and Zabriskie stated that a significant relationship was observed between marital satisfaction and leisure time. Also, a positive and significant relationship was seen between married people's leisure conflicts and marital satisfaction (68).

## Conclusion

According to the present study, it can be concluded that brain-behavioral systems and demographic variables can play an important role in improving marital satisfaction because these factors showed the greatest contribution and relationship with marital satisfaction. Therefore, it is recommended that psychologists pay attention to the importance and impact of these variables in the treatment and promotion of couples' marital satisfaction in counseling and awareness programs.

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## Abbreviations

KMSS: Kansas Marital Satisfaction Scale; BIS: Behavioral Inhibition Systems; BAS: Behavioral Activation Systems

## Declarations

## Ethics approval and consent to participate

All methods of this study were carried out in accordance with the Helsinki declaration. The ethical approval for the study was obtained from the Research Ethics Committee of the Vice-Chancellor of Research and Technology of Tehran University (IR.UT.PSYEDU.REC.1401.060). Written informed consent was obtained from all individual participants included in the study.

## Consent for publication

Not applicable

## Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Competing interests

The authors have no conflicts of interest.

## Funding

Personal savings

## Authors' contributions

All authors were involved in the preparation of this article. SSPT and YDS initiated the study and conducted the conception and design of the study. YDS and SSPT were responsible for the definition of intellectual content and literature search. SSPT, YDS, and HF contributed to the acquisition, analysis, and

interpretation of data. YDS wrote and drafted the manuscript, and SSPT and HF reviewed and edited its.

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