

The Moderating Effect of Gender Role in Relationship Between Emotional Divorce and Marital Satisfaction: Comparison of Partial Least Square (PLS) and Consistent Partial Least Square Methods (PLSc) Methods

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Abstract

Objective: Emotional divorce refers to a state of emotional disengagement from one's spouse, which can lead to marital dissatisfaction. Gender role conflict is a predictor of marital dissatisfaction and ultimately, divorce. The literature suggests that rigid adherence to traditional gender roles may contribute to emotional divorce. In this article, the authors aim to investigate the moderating effect of gender roles in the relationship between emotional divorce and marital satisfaction by using two multivariate methods in statistical analysis.

Materials and methods: This cross-sectional study was conducted on 539 women aged 18-65 years. The standard questionnaires used include 1) Bem Sex Role Inventory (Short form), 2) Gutman's Emotional Divorce Questionnaire, and 3) Evaluation and Nurturing Relationship Issues, Communication and Happiness (ENRICH) Marital Satisfaction (EMS) Scale. To achieve the purpose of the study, PLS and PLSc methods have been used.

Results: The mean age and time of marriage were 33.88 ± 6.6 and 13.03 ± 7.29 years. There is a significant negative relationship between emotional divorce and marital satisfaction. The gender role of most participants in the study has been androgenic and feminine, which has increased the moderating effect of this relationship. Also, when there is a common (reflective) factor model, Consistent Partial Least Square is more likely to provide a better fit than Partial Least Square.

Conclusion: The results showed that higher women's marital satisfaction would be associated with lower emotional divorce. On the other hand, the role of gender is a mediating factor in marital satisfaction and emotional divorce. Having good male and female characteristics can have a positive impact on marital satisfaction, so increasing couples' knowledge of gender roles and trying to reduce traditional extreme roles can help increase marital satisfaction and reduce emotional divorce.

Keywords: Emotional Divorce; Marital Satisfaction; Gender Role, Partial Least Square; Consistent Partial Least Square; Iran

Introduction

Marriage can be one of the most exciting and stressful events in any person's life, and it is also a dynamic and changing process that lasts until the death of a spouse or divorce. Just as a happy marriage can be a barrier to harm and negative events

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dissatisfaction and discomfort in marriage have negative effects on the physical and mental health of couples and their children (1). Divorce is much more complicated than it seems despite the high official divorce rate much more statistics are devoted to emotional divorce(2). Emotional divorce is a new term in the Urban Dictionary, marriage, defined as "a married person who behaves like a single person"(3).

When a husband and wife's relationship goes cold due to unresolved sustained conflicts and disagreements, traces of emotional divorce may emerge (4). This phenomenon, which refers to the breakdown of emotional intimacy and connection between partners, is a growing concern in contemporary society. While some studies suggest that a significant proportion of divorced adults experience no long-term ill effects, others indicate that emotional divorce can have a profound impact on individuals' mental and physical health. Therefore, it is important to identify emotional divorce and provide appropriate tools to prevent formal divorce (5). This problem in a relationship causes disadvantages and reduced positive energy in the family, which has more negative effects than divorce and causes children to run away from the family environment. statistics show that the percentage of marital incompatibilities that lead to emotional divorce is increasing (6). This problem is very serious in Iran but obtaining valid statistics remains difficult. In one case it is argued that emotional divorce's rate is double that of a legal divorce (7).

As such, it is important to understand the factors that contribute to emotional divorce and to develop effective interventions to support individuals and families during this difficult time. Emotional divorce can also lead to other issues such as infidelity and eventually divorce. When couples experience emotional divorce, they tend to feel dissatisfied with their marriage, communication becomes strained, and conflicts become more frequent.

According to many studies, marital satisfaction is one of the most important factors of emotional divorce (8). The concept of marital satisfaction has different dimensions, including sexual satisfaction, partner's support, participation in the decision-making process, relationship with the spouse's family, social support, psychological well-being, and life satisfaction (9). A marital relationship is a complex relationship and its success is dependent on several factors. Perhaps, it can be stated that the first important component in this relationship is cognition (10). Being in an unhappy marriage is associated with

significantly lower levels of happiness, life satisfaction, self-esteem, and overall health along with elevated levels of psychological distress and depression for both men and women. Similarly, Smart also stated that there is a correlation between marital dissatisfaction and divorce (11). Many young couples have problems because of their lack of familiarity and in some cases insufficient awareness of how to deal with marital and emotional relationships between spouses, which unfortunately become family crises in some cases where the effects It can be seen in problems such as increasing divorce statistics, sex diversity, and so on (12). Therefore, emotional divorce can have a negative impact on marital satisfaction, leading to decreased psychological well-being and increased emotional distress. Furthermore, a study on satisfaction in adult romantic relationships after parental divorce found that individuals who experienced parental divorce were more likely to have lower levels of relationship satisfaction (13). Problems with emotional connection and marital dissatisfaction are one of the components of estimating the likelihood of emotional divorce; marital life satisfaction can predict the sustainability of a relationship and conflict resolution, and is also one of the main structures of Family Development and maintenance. When marital satisfaction is low, couples feel emotionally defeated, which causes the couple to distance themselves from each other. Because after marriage, couples interact with each other, the quality of this relationship is influenced by various factors, including the concepts of masculinity and femininity (14). To explain the role of gender, or the same femininity or masculinity, there are several theories. The BAM model is one of the well-known theories that consider the role of gender as two separate dimensions meaning that a person can be in high or low masculinity and in high or low femininity simultaneously (15). In the definition of gender role it can be said that it represents the same attitudes behaviors cognitions and sexual feelings that are commonly known in a particular cultural context relatively masculine or feminine based on masculinity and femininity, there is a stereotype of gender role. High masculinity and low femininity represent the male stereotype. The stereotype shows femininity, low masculinity, and high femininity. High masculinity and high femininity are characteristic of the androgenic stereotype. There is also the undifferentiated stereotype that relates to low masculinity and low

femininity (16). Gender role refers to the social and cultural expectations that influence how men and women should behave in society. In the relationship between emotional divorce and marital satisfaction, gender roles can influence how individuals express and respond to their emotions. For instance, in traditional gender roles, men are expected to suppress their emotions while females are allowed to show more emotional expression. This difference in emotional expression can impact how individuals perceive their marital satisfaction and their tendency towards emotional divorce. Overall, the literature suggests that rigid adherence to traditional gender roles may contribute to emotional divorce. However, this may be due to societal pressures to remain in unhappy marriages rather than actual satisfaction with the relationship. However, there is no specific study found that examines the moderating effect of gender role in the relationship between emotional divorce and marital satisfaction. In these fields, relationship patterns connecting disorders and risk factors are always complex. In order to determine this relationship, we take help from Structural Equation Modeling (SEM). SEM has, for a long time, gained interest among psychiatry and psychology researchers as a tool for multivariate data analysis (17). During the past few decades, PLS algorithm, as one of the well-known approaches to Variance-Based SEM (VB-SEM), as an SEM estimator, has become increasingly popular (18, 19). This approach aims to minimize the combination of bias and error variance (20).

. PLS-SEM works efficiently with small sample sizes and complex models and makes practically no assumptions about the underlying data (21). In addition, PLS-SEM can easily handle reflective and formative measurement models, as well as single-item constructs, with no identification problems. Yet, the use of PLS as an estimator for structural equation models is not without disadvantages. Of these deficiencies of PLS, the lack of consistency is probably more serious, because of its adverse consequences for substantial research findings. Dijkstra and Henseler developed Consistent Partial Least Squares (PLSc), which is based on PLS, but applies a correction for attenuation to produce consistent estimates for structural models containing latent variables (22). In this article, we aim Comparison of PLS and PLSc methods in investigating the moderating effect of gender role in the relationship between emotional divorce and marital satisfaction.

Materials and methods

Study design: This cross-sectional study was conducted on women 18-65 years referring to health centers covered by Mashhad University of Medical Sciences. Participants were selected by multistage sampling. The first step was stratified sampling. The division was based on the population living in each stratum. Then, in the next steps, samples were determined based on cluster and available sampling.

The inclusion and exclusion criteria: Having consent to participate in the study, 2) Being Iranian and Persian speaking, 3) Living in Mashhad, 4) Being literate, 5) Being Muslim and married, 6) Age between 18-65 years old, 7) Currently living with his husband, 8) Have an official marriage, 9) To have passed at least one year since the date of marriage, 10) Not to be treated for sexual dysfunction (in the past or present), 11) not to be pregnant, 12) To have no special problems and disabilities in himself and his husband, 13) To have no experience of Unfortunate for the past six months, 14) Not having a previous marriage history of the individual and his wife. The answer to less than 10% of the questions was the exclusion criterion.

Sample size: As a rule of thumb, the minimum sample size in PLS-SEM should be greater than 10 times the maximum number of inner or outer model links pointing at any latent variable in the model; in other words, must be ten times the largest number of paths in either the structural or formative measurement models (23). Therefore, we can safely conclude that a sample size of 539 was acceptable for this study.

Data collection: Demographic characteristics including personal characteristics, information related to marital life, diseases, and drug use.

Bem Sex Role Inventory (Short form): The Bem Sex Role Inventory (BSRI) is a widely used instrument in research on gender roles. This questionnaire offers four different possible categories: masculine, feminine, androgynous, and undifferentiated. It assesses how people identify themselves psychologically. The BSRI short form consists of 30 items that participants rate themselves on a 7-point Likert scale. The validity and reliability of this questionnaire has been confirmed in Iran (24).

Gutman's Emotional Divorce Questionnaire: The Emotional Divorce Questionnaire was designed by John Gutman in 2008 and includes 24 items about various aspects of life that one may agree or disagree with. It is used to measure emotional divorce, which is a term used to describe the emotional

disconnection between partners in a relationship. The cut-off point of this questionnaire is 8, and if the score is higher than that, an individual is at risk of emotional divorce. In a study, Cronbach's alpha was reported as 0.86 (25).

Evaluation and Nurturing Relationship Issues, Communication and Happiness (ENRICH) Marital Satisfaction (EMS) Scale

The EMS Scale is a brief but effective tool for researchers and clinicians who need to assess marital quality. This form has 47 questions that examine different dimensions of marital satisfaction such as satisfaction with spouse, satisfaction with sexual relations, financial supervision, communication, role of children, relatives, and friends. Its scoring method is a five-point Likert scale. The internal consistency of this scale was reported to be 0.75 using Cronbach's alpha (26).

Ethical issues of research: This study was approved by the Ethics Committee of Mashhad University of Medical Sciences with the code of ethics: IR.MUMS.FHMPM.REC.1401.177. The participants were informed about the scientific nature of the research. Confidentiality and anonymity were guaranteed and informed consent was obtained from the participants.

Data Analysis: In this study, descriptive statistics were analyzed using frequencies, means, and standard deviations. PLS and PLSc were used to test the relationship between the latent variables. The latent variables that were assessed included gender role, Emotional Divorce and Marital Satisfaction. Bootstrapping is a non-parametric method that allows testing path coefficients in PLS-SEM. Analysis of the inner model quality includes an assessment of the coefficient of determination (R^2), path coefficient, and effect size (f^2). R^2 was used to test the explanatory and predictive power of the structural model. The R^2 values range from 0 to 1, with a value closer to one indicating a better model. R^2 -values of 0.19, 0.33, and 0.67, as suggested by Urbach and Ahlemann (2010), correspond to small, medium, and large explanatory powers, respectively (27). f^2 -values of 0.02, 0.15, and 0.35, as suggested by Cohen (1988), correspond to weak, moderate, and strong effects. Analysis of the path coefficient can describe

the association between variables in the hypothesis. The path coefficient values range from -1 to +1, with a coefficient closer to 1 indicating a stronger association, whether the association is positive or negative. We focused on internal consistency reliability assessment.

For this purpose, we estimated three measures, namely Cronbach's alpha, composite reliability (CR), and Rho_A. convergent validity is also assessed from the values of Average Variance Extracted (AVE). The formula of AVE is given below.

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}$$

λ represents the standardized factor loading and i is the number of items. An AVE of 0.50 or greater is considered adequate for convergent validity. We used the Hetrotrait-Monotrait (HTMT) criterion to assess discriminant validity. Typically, HTMT values less than 0.85 indicate a satisfactory level of discriminant validity (28).

The Standardized Root Mean Squared Residual (SRMR) used to assess the model's GoF. The lower the SRMR, the better the model's fit. Perfect fit is obtained when SRMR is zero. SRMR value of 0.08 or lower is acceptable. All data were analyzed using SPSS 25.0 and SmartPLS 4 software and the test significance was a two-tailed $\alpha = 0.05$.

Results

Participant's information: 539 subjects were included in analysis. The mean age and time of marriage were 33.88 ± 6.6 and 13.03 ± 7.29 years. Most participants were Diploma (41.4%), Housekeeper (73.1%), and No History of infertility (93.1%), enough income (80%). According to Gutman Emotional Divorce Inventory 152(28.2%) of the participants have emotional divorce. Also, according to Enrich Marital Satisfaction Inventory, the results are as follows: Relative dissatisfaction (3.3%), Middle satisfaction (59.2%), great satisfaction (37.1%) and very satisfied (0.2%). In this study, based on BSRI, most of the participants have androgynous gender role (37.5%), feminine (21.5%) and masculine (13.5%).

The mean and bivariate correlation between contrast in our study are given in the Table 1.

Table 1: Characteristics of latent constructs

Constructs	Mean (SD)	Emotional Divorce	Marital Satisfaction
Gender-Role	4.65±1.519	0.737*	0.487*
Emotional Divorce	4.94±1.432	1	0.560*
Marital Satisfaction	4.08±1.608		1

*Indicates the significance at 0.05 level

Cronbach’s alpha, Dijkstra-Henseler’s rho coefficients, and composite reliability were used to evaluate construct reliability. As Table 2 shows, the construct exceeded the recommended cut-off value of 0.7 for these three measurements. Table 2 shows that the measurement model was satisfactory concerning the above criteria. Convergent validity wasn’t proven since the average variance extracted (AVE) for the construct was lower than 0.5.

The structural model assessment includes the testing of the relationships between all model constructs shown in Table 3. This Table present the results of the bootstrapping technique conducted on the different resampled datasets.

It can be said that there is a negative significant relationship between emotional divorce and marital satisfaction ($\beta = -0.698$). With the inclusion of the gender role moderator variable, this relationship has increased somewhat ($\beta_{PLS} = -0.732, \beta_{PLSc} = -0.773$). Our results showed that 59.2% and 65.4% of the variation in marital satisfaction were determined by the structures related to them in the PLS and PLSc models, respectively. Based on criteria proposed by Urbach et al. this represents a moderate level of explanatory power. With regard to the f^2

effect sizes and following the guidelines by Cohen (1988), our analysis showed that the sizes of the effects of gender role on marital satisfaction ($f_{PLS}^2=0.079, f_{PLSc}^2 = 0.089$) and moderating effect ($f_{PLS}^2 = 0.066, f_{PLSc}^2 = 0.108$) were the small effect sizes. Meanwhile, the size of the effect of emotional divorce on marital satisfaction shows a great impact ($f_{PLS}^2 = 1.167, f_{PLSc}^2 = 1.491$). The variance inflation factors (VIF) values in the PLS and PLSc were seen to be less than 3. Therefore, there is no multicollinearity in the model.

To evaluate the structural model, a bevy of features was examined. The final model with path coefficients, the f^2 effect sizes and the R^2 values of the constructs are presented in Figure 1.

Table 4 presents the results for discriminant validity through the Heterotrait-Monotrait ratio of correlations (HTMT) inference. All the constructs reached discriminant validity because no confidence interval contained the value of zero.

This circumstance meant that each variable was different from the others. In our PLSc model, we have an SRMR value of 0.069, which is lower the 0.08 threshold; this suggests good theoretical model fit.

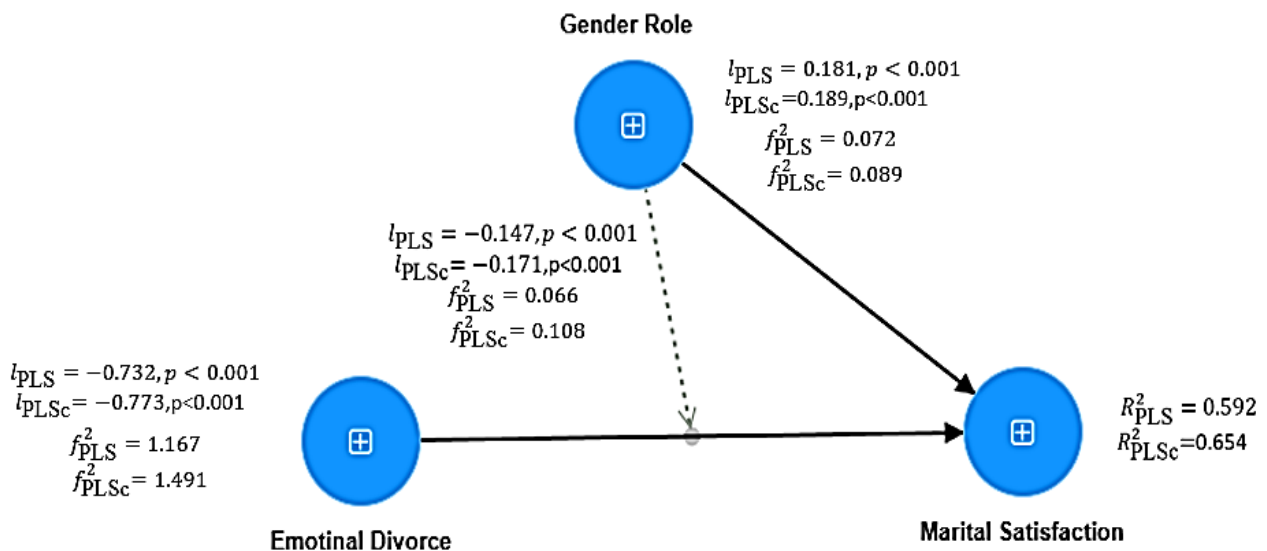


Figure 1: Model results

Gender Role in Emotional Divorce and Marital Satisfaction

Table 2: Measurement validation in PLS and PLSc models

Construct	PLS results				PLSc results			
	Alpha	rho_A	CR	AVE	Alpha	rho_A	CR	AVE
Emotional Divorce	0.94 (0.933-0.947)	0.948 (0.941-0.953)	0.946 (0.94-0.952)	0.428 (0.4-0.456)	0.94 (0.933-0.947)	0.948 (0.941-0.953)	0.939 (0.931-0.946)	0.402 (0.373-0.431)
Gender Role	0.842 (0.821-0.86)	0.888 (0.867-0.907)	0.831 (0.792-0.86)	0.237 (0.214-0.261)	0.842 (0.82-0.86)	0.893 (0.871-0.912)	0.733 (0.633-0.815)	0.188 (0.16-0.226)
Marital Satisfaction	0.797 (0.777-0.818)	0.961 (0.956-0.964)	0.841 (0.824-0.856)	0.326 (0.306-0.344)	0.797 (0.776-0.817)	0.961 (0.956-0.964)	0.84 (0.82-0.857)	0.312 (0.291-0.331)

Table 3: Structural PLS and PLSc Models Analyses Using the Bootstrap Process

Outcome	Predictor	Path	Model	Coefficient	T statistics	P value	VIF	f ²
Marital Satisfaction R ² _{PLS} =0.592	Emotional Divorce	Emotional Divorce-> Marital Satisfaction	PLS	-0.732 (-0.767, -0.693)	32.89	<0.001	1.126	1.167
			PLSc	-0.773 (-0.809, -0.729)	31.68	<0.001	1.158	1.491
R ² _{PLSc} =0.654	Gender Role	Gender Role-> Marital Satisfaction	PLS	0.181 (0.124, 0.222)	6.05	<0.001	1.125	0.072
			PLSc	0.189 (0.125, 0.242)	5.26	<0.001	1.163	0.089
	Moderating effect	Moderating effect-> Marital Satisfaction	PLS	-0.147 (-0.184, -0.108)	6.37	<0.001	1.11	0.066
			PLSc	-0.171 (-0.213, -0.125)	6.31	<0.001	1.144	0.108

The direct effect and indirect effect assessed by applying one-tailed percentile bootstrapping test with 10,000 samples at 5% confidence level (5%,95%); LB: Lower bound of the percentile confidence interval; UB; Upper bound of the percentile confidence interval.

Table 4: Comparison HTMT Inference between PLS and PLSc models

Constructs	PLS results		PLSc results	
	Emotional Divorce	Gender Role	Emotional Divorce	Gender Role
Gender Role	0.291 (0.23-0.328)		0.291 (0.233-0.33)	
Marital Satisfaction	0.756 (0.718-0.789)	0.346 (0.279-0.377)	0.756 (0.72-0.788)	0.346 (0.281-0.376)

*Significance, 95% bias-corrected confidence interval performed by a bootstrapping procedure with 10,000 replications.

Discussion

This research was conducted with the aim of investigating gender roles on the strength and orientation of the emotional divorce relationship and marital satisfaction. As confirmed in our study Previous research shows that there is a significant negative relationship between emotional divorce and marital satisfaction meaning that the higher the test score on the marital satisfaction questionnaire the lower the rate of emotional divorce and vice versa (8, 29, 30). The study also confirms the modulating model of the role of gender in the relationship between marital satisfaction and the reduction of emotional divorce. A review of the research literature shows that the importance of androgyny or femininity on marital life satisfaction is very important and that people whose spouses are feminine or androgynous report the most satisfying relationships (31). Most of the participants in this study were androgynous and feminine role, which with the inclusion of the gender role moderating variable, the relationship between emotional divorce and marital satisfaction increased slightly. Specifically, individuals with androgynous gender roles tend to have higher marital satisfaction compared to those with masculine and undifferentiated gender roles. This result was consistent with the results with Pilar matud and colleagues (2014) in Spain, which shows that life satisfaction in women and men whose self-image includes aspects of both male and female gender roles, i.e. both are more instrumental and expressive (32). In explaining the findings of this study, it can be said that although feminine qualities may include Happiness, loyalty, support, sensitivity, warmth, etc... It's very important to create intimacy and marital satisfaction, but endogenous people are more satisfied with marital life because they can fulfill multiple roles by integrating both instrumental qualities (mastery, assertiveness, courage, and risk-orientation) and expressing (empathy, warmth, and ability to understand) expectations, and thus bring more satisfaction into married life (31). Another possible explanation for the greater marital satisfaction of people with androgynous gender roles is that they are more flexible and adaptable to different conditions, as they are not limited to the same gender and are more empowered to solve gender stereotypes.; Also, having the personal characteristics of both sexes in people with androgenic gender roles can increase their perception of their partner's feelings and behaviors (16). Women with undifferentiated gender

roles show less ability to be intimate and sacrifice their self-leadership to compensate for it to maintain contact with their spouse, which will cause their marital function to be disrupted in critical and stressful situations, and because they have less logical power to deal with problems, it will increase marital conflicts (33). However, no study was found so far that investigated the moderating effect of gender in this relationship. One study found that gender role attitudes are related to emotional spousal support and marital quality (34). Another study found that men may have more needs for romantic relationships compared to women, and gender roles can impact couple interaction and marital satisfaction (35). The lack of emotional intimacy in a relationship, which is mostly present in a gender-indistinguishable role, can lead to feelings of isolation, disconnection, and a lack of emotional safety. This can contribute to emotional divorce and decreased marital satisfaction. The relationship between gender roles and emotional divorce has been studied in the literature. Gender role conflict has been found to be a predictor of marital dissatisfaction and ultimately, divorce. A study on gender-related influences on marital satisfaction and conflict found that traditional gender roles were associated with lower levels of marital satisfaction (36). PLSc is a more robust version of PLS that is less sensitive to outliers and influential observations. A comparison between PLS and PLSc estimates found that PLSc is more robust than traditional PLS in estimating convergent validity and path coefficients and yields better power-coefficient of determination. The main advantage of the consistent PLS algorithm is that it provides consistent and asymptotically normal PLS estimators for path coefficients, construct correlations, and indicator loadings (22). It has been determined that PLSc is able to explain more than half of the variation in the endogenous variable of marital satisfaction. This value is less in the PLS model. This result is consistent with the study that R^2 is actually more explanatory in PLSc than PLS (37). It can be said that when a path coefficient is significant, the f^2 result of PLSc tends to produce a higher estimate. Similarly, when the path coefficients are insignificant, the f^2 results from PLSc produce lower estimation results. In such a situation, the exact estimation of PLSc performs better than PLS to make better decisions about the fundamental influence on the endogenous structure. The findings of this study show that PLSc estimates play a greater role in SEM

applications when estimating common factor models (true reflection model), which is consistent with a study in this field (38).

Conclusion

In general, it can be concluded that when there is a common (reflective) factor model, PLS is more likely to provide a better fit than traditional PLS. It was shown that emotional divorce is strongly related to marital satisfaction. When couples feel emotionally disconnected from each other, they are more likely to report lower levels of marital satisfaction and higher levels of conflict, negativity, and distress. However, research suggests that androgynous individuals, who exhibit both masculine and feminine personality traits, often report higher levels of marital satisfaction. Generally, identifying the factors that affect the relationship between emotional divorce and marital satisfaction is important for understanding the underlying issues in a relationship, preventing emotional divorce, and developing effective interventions to promote healthy and fulfilling relationships.

The results showed that more women's marital satisfaction would be associated with less emotional divorce. On the other hand, the role of gender is a mediating factor in marital satisfaction and emotional divorce, which means that the role of endogenous sex in women is associated with more marital satisfaction and less emotional divorce. And also the undifferentiated gender and male role can be associated with a decrease in marital satisfaction and, as a result, emotional divorce. Having good male and female characteristics can have a positive impact on marital satisfaction, so increasing couples knowledge of gender roles and trying to reduce traditional extreme roles can be helpful in increasing marital satisfaction and reducing emotional divorce.

Conflict of Interests

Authors declare no conflict of interests.

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