

# ***Emotion Regulation and Parasocial Relationships in Female-Oriented Games: A Quantitative Analysis of the Chinese Female Gaming Market***

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**Abstract:** In recent years, female-oriented games have gained widespread popularity in mainland China, resulting in an expanding player demographic. Current research on these games primarily focuses on their social impacts, with some studies investigating social anxiety, parasocial interactions, and purchase intentions. However, there is a lack of research examining the effects of emotion regulation strategies and emotional needs in female-oriented games. This study utilized an online survey to investigate emotion regulation strategies, emotional need fulfillment, parasocial relationships with game characters, and both in-game and out-of-game purchasing behaviour among 212 adult female players. The results indicate a mutually reinforcing effect between parasocial relationship intensity and the level of emotional fulfillment. Romantic parasocial relationship intensity is a positive predictor for out-of-game purchases while negatively impacting in-game purchases. Additionally, the fulfillment of emotional closeness positively predicts out-of-game purchases. Cognitive reappraisal, as an emotion regulation strategy, moderates the relationship between parasocial relationships and out-of-game purchases. Furthermore, the fulfillment of emotional closeness mediates the relationship between romantic parasocial relationships and in-game purchasing behaviour.

**Keywords:** Female-Oriented Games, Emotion Regulation, Parasocial Relationship, Purchasing Behaviour.

## **1. Introduction**

In recent years, female-oriented games, particularly otome games, have gained significant popularity in the Chinese market. These games attract a growing number of female players through immersive romantic experiences and interactive storylines. The market expansion has sparked increased social discussion in the psychological processes and consumer behaviour of these players. However, academic research specifically focused on female-oriented games and the psychology of female gamers remains relatively scarce. This study aims to explore the connection between parasocial relationships formed in female-oriented games and the emotional needs and regulation strategies of the game players. The goal is to provide new insights into the mental health and consumer behaviour of female game players.

## **2. Literature Review**

### **2.1. Female-targeted Games and Female Players**

In the current online gaming market, female players have become a significant demographic. Women accounted for 46% of the total player base in China, representing approximately 300 million players, with this number continuing to rise [1]. Similarly, in Western countries, nearly half of the gaming population consists of female players [2]. Despite this, research specifically focused on female players and female-targeted games remains relatively scarce. This gap may be attributed to the persistent stereotype of the male gamer, as well as findings suggesting that male players are more susceptible to problematic gaming behaviour [3, 4].

However, existing studies on emotional regulation in video games, and the pathology of gaming addiction highlight the importance of individual differences, particularly gender differences, in shaping research outcomes [5, 6]. Studies indicate that women may be more susceptible to internet gaming disorder (IGD) compared to men, with neuroimaging research revealing gender-specific variations in brain structure [7]. Gender differences in gaming preferences also significantly influence outcome measures in IGD studies [6]. Female-oriented games and female players, due to their psychological differences from males, merit distinct consideration in future research.

### **2.2. Emotional Needs and Regulation Strategies in Online Gaming**

Digital entertainment holds significant emotional power, with certain video games demonstrating intervention potential, particularly in addressing issues like depression and supporting emotional regulation goals [8]. Female players exhibit unique emotional needs compared to males [9], showing a greater tendency to explore emotional experiences more deeply [8]. They are often drawn to games that offer escapism and the formation of emotional connections [9]. Moreover, female players tend to employ a wider range of emotional regulation strategies within gaming contexts than males and are more likely to offset maladaptive regulation strategies by utilizing adaptive ones [5]. It is also noteworthy that male gamers, especially adolescents, often use gaming to exhibit emotional responses and manage emotions like anger [5]. However, current research has not clarified whether female players intentionally use games for emotion regulation.

### **2.3. Parasocial Relationships and Emotional Needs Fulfillment in Female-oriented Games**

Parasocial interaction (PSI) refers to the one-sided relationships users form with real individuals or fictional characters through their engagement with media [10]. Gong and colleagues' research on Chinese otome games highlights the significant role of this kind of parasocial phenomenon in female-oriented games [9]. These games create female-centered romantic relationships and offer opportunities for players to interact with male characters. Female players often create attachments and develop romantic parasocial relationships (PSR) through long-term PSI with these male characters [9]. The establishment of this unique PSR in female-orientated games is based on the gender characteristics of females, as they generally exhibit greater empathy and emotional sensitivity than males, making them more prone to form strong PSI [11].

Previous research regarding social media indicates that PSR offers advantages over traditional two-sided relationships, particularly in fulfilling emotional needs [12]. PSR enriches social networks by providing more consistent and flexible social connections, thereby contributing to increased well-being and addressing complex psychological needs such as emotional regulation [12]. Furthermore, during experiences of negative emotions like loneliness, individuals are motivated to engage with PSR, which can reduce feelings of loneliness [13]. While PSR may not satisfy emotional needs as

effectively as close others, they can surpass the emotional benefits derived from casual in-person acquaintances [12].

Research on the role of PSR in fulfilling emotional needs and facilitating emotional regulation has primarily focused on social media and celebrity interactions. However, there is a gap in understanding how PSR in the gaming context influences emotions and emotion regulation. And whether emotional needs, in turn, strengthen PSR connections in the game. Therefore, examining the connection between PSR and emotional needs in female-oriented games may help address the question of whether female players consciously use games as a tool for emotion regulation. The strengthening of PSR with male characters in games may serve as a means for female players to seek emotional and social support outside of real-world interactions.

#### **2.4. Parasocial Relationships and Consumption Behaviour in Female-oriented Games**

Nowadays, the majority of female-oriented games in the Chinese market are mobile games. These games typically employ a freemium model, allowing users to download them for free, and then generate revenue through in-game purchases of tokens, items, and paid functions. Previous studies have shown that PSR can serve as a marketing tool, enhancing purchase intentions through the advertising effect of celebrities on social media [14]. In female-oriented games, in-game purchase intentions are linked to the different types of PSR. Romantic PSR, particularly associated with sexual attraction, tends to be stronger in these games and positively predicts the intention to make in-game purchases. In contrast, non-romantic PSR is more effective in predicting continued playing intention [9]. This research primarily examines the relationship between PSR and purchase intention, without investigating actual consumption behaviour and expenditure. While the continued playing intention may serve as a potential predictor of future consumer behaviour, reliability needs further discussion.

In addition to PSR, the emotional satisfaction derived from gaming may also serve as a significant factor in driving purchasing behavior. Engaging in consumption can provide emotional fulfillment, which can further motivate individuals to make purchases. In the gaming context, fulfilling social needs through relationship-building may motivate continued engagement with games among female players [9].

Although previous research has not extensively explored out-of-game purchases as a primary variable, many participants reported that their main game-related consumption involve buying peripheral goods and other related products [9]. To better understand consumer behaviour, out-of-game purchases need to be considered in studies of female-oriented games.

#### **2.5. Research Questions and Hypotheses**

A review of the existing literature reveals that emotional needs and emotion regulation strategies in gaming differ between male and female players. For instance, female-oriented games, such as otome games, may specifically address the unique emotional needs of female players. Moreover, players often develop strong PSR in female-oriented games, which can fulfill certain social needs similar to traditional two-sided relationships. In other social media contexts, both PSR and emotional satisfaction are closely linked to consumer behaviour. Since the measurement of PSI and PSR overlaps, the following discussion will primarily focus on PSR within female gaming contexts.

Therefore, this study posits the following research questions:

1. How does the establishment of parasocial relationships (PSR) with game characters in female-oriented games relate to the fulfillment of emotional needs among players?
2. How does the establishment of PSR with game characters relate to the emotion regulation strategies employed by players of female-oriented games?

3. In female-oriented games, how do the development of PSR and the satisfaction of emotional needs correlate with both in-game and out-of-game consumption behaviour?

Based on the literature review, the following hypotheses can be proposed:

1. The intensity of parasocial relationships (PSR) and the fulfillment of emotional needs have a mutually reinforcing effect.

2. Both PSR and the fulfillment of emotional needs are significant predictors of purchasing behavior, both in-game and out-of-game.

3. The fulfillment of emotional needs mediates the relationship between PSR and purchasing behavior, while emotion regulation strategies moderate this relationship.

Figure 1 shows the hypothetical mediation and moderation model, where parasocial relationships serve as the independent variable, purchasing behaviour as the dependent variable, emotional needs fulfillment as the proposed mediator, and emotion regulation strategy as the proposed moderator. The model will be tested in this study.

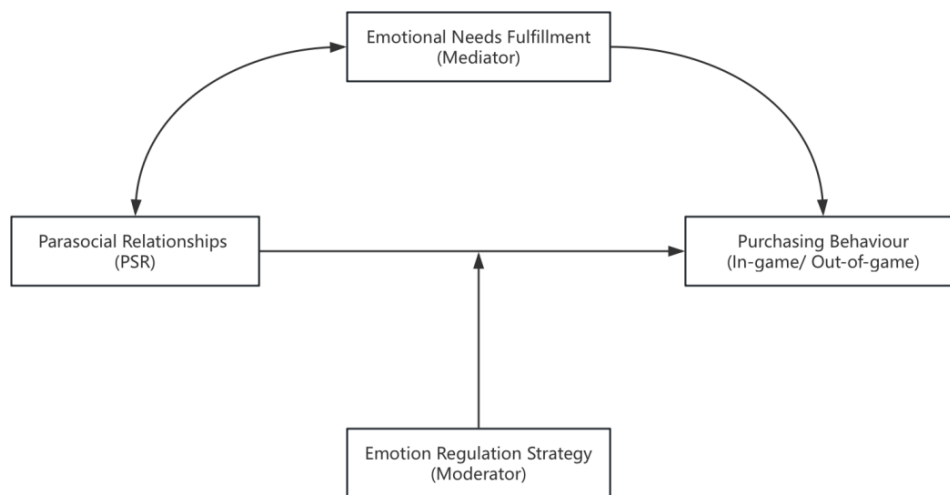


Figure 1: Hypothetical model of the mediation and moderation analysis.

### 3. Methodology

This study is a quantitative analysis using an online questionnaire for data collection. The study was conducted within mainland China. Formal statistical analyses of the data were conducted using SPSS 27.

#### 3.1. Research Design and Ethics

The anonymous questionnaire was distributed on social media platforms such as WeChat, Douyin, and Weibo, with tags including female-oriented games, otome games, and female gaming. Data collection took place from September to October 2024. All participants read an informed consent form prior to completing the questionnaire, ensuring that their information would be used solely for this study, and guaranteeing the security of their personal information. Given that some female-oriented games are 18+ games, all participants in this study were adults aged 18 and above, due to concerns about the mental health of minors. Underage gaming behaviour will not be discussed in this study.

### 3.2. Sample and Procedure

A total of 218 women aged 18 or above participated in the survey. After excluding invalid data, 212 questionnaires were retained for analysis. Among the participants, 68.4% were aged between 18-22, and 66.5% were currently enrolled as students. The educational background of the participants indicated that the highest proportion, 82.1%, had attained a college degree.

### 3.3. Measures

To test the hypotheses proposed in this study, appropriate scales were selected from existing literature and adapted to align with the research questions. Given that the target population is Chinese female players, all original English questionnaires were translated into Chinese to ensure comprehensibility. The majority of the questions in the questionnaire utilized a 7-point Likert scale, with participants rating from 1 to 7, where 1 indicates strongly disagree and 7 indicates strongly agree. In the section concerning purchasing behaviour, the questionnaire included both judgment-based options and binary choice questions.

#### 3.3.1. Emotional Need Fulfillment

To link emotional needs with PSR, this study referenced two scales in the research by Lotun et al. regarding how the PSR of YouTube creators satisfied the emotional needs of individuals [12]. The first scale is a 7-point Likert scale developed by Cheung et al. [15], where participants will be asked to evaluate the extent to which they experience emotional fulfillment (EF) in their interactions with their favourite game characters.

In close relationships, emotional responsiveness and fulfillment can enhance closeness, which in turn generates additional emotional needs [12]. Therefore, the second scale is a 7-point Likert scale with 6 items (adapted from [12]), designed to assess relationship responsiveness (RR) and closeness (RC).

#### 3.3.2. Emotion Regulation

The Emotion Regulation Questionnaire (ERQ), developed by Gross et al. [16], is widely utilized in psychological research related to emotion regulation strategies. It assesses two primary emotion regulation strategies: cognitive reappraisal and expressive suppression. In this study, participants are asked to respond to ERQ based on their real-life experiences. The aim is to analyze how emotion regulation strategies of cognitive reappraisal (ER-R) and expressive suppression (ER-S) in real life influence their need for PSR in virtual environments. Additionally, two extra items were included in the questionnaire to inquire about the extent to which participants subjectively use female-oriented games as a tool for emotional regulation and their perceived effectiveness.

#### 3.3.3. Parasocial Relationship

Referencing the research by Gong and colleagues regarding PSI in female-oriented games in China [9], this study employs the Multiple-Parasocial Relationships Scale to measure PSR [17]. The scale was developed by Tukachinsky in 2010. It consists of 11 items and offers a more precise assessment of romantic PSR (R-PSR) within gaming contexts compared to other established PSI measurement tools.

### 3.3.4. Purchasing Behaviour

This study adapts the in-game purchase intention questionnaire developed by Balakrishnan and Griffiths to assess in-game purchasing (IGP) behaviour [18]. Additionally, two items concerning out-of-game purchases (OGP) were included to facilitate a comparative analysis between in-game and out-of-game purchasing behaviour.

### 3.4. Data Analysis

Data analysis was conducted using SPSS 27. The assumption of normality was assessed by examining the skewness and kurtosis of the variables, where skewness values between +2 and -2 and kurtosis values between +7 and -7 indicate conformity to normality. All variables met the normality assumption.

To check the model assumptions for mediation and moderation, correlation analysis was used to check whether the correlation between the variables was significant. ANOVA was employed to identify potential covariates that might influence the dependent variable within the model, which were subsequently controlled in the mediation analysis. Regression analysis was used to check hypothesis 1 and hypothesis 2. To test hypothesis 3, using the PROCESS v4.2 macro (Hayes, 2012) for mediation and moderation analysis. A 95% confidence interval was reported, with 5000 bootstrap samples. In all analyses, a p-value of less than 0.05 was considered statistically significant.

## 4. Results

### 4.1. Descriptive Statistics

The survey results indicate that the majority of participants hold a college degree (82.1%), with 66.5% currently enrolled as students. Among different types of female-oriented games, otome games were the most popular (72.6%), significantly outpacing other game types. Other game types mentioned included dress-up games (13.2%), life simulation games (5.2%), and healing games (9.0%).

In-game purchases were common, with 93.9% of participants reporting that they recharge within the games. Additionally, 96.7% stated that they would purchase-related peripheral goods out of games or engage in associated offline events. Notably, a greater proportion of participants (65.1%) expressed a preference for spending on related peripheral goods or at offline events rather than making in-game purchases, as this external consumption model provided them with a greater sense of value for their money. Moreover, consumption of female-oriented games may exhibit a social dimension, as a significant portion of participants (84.0%) indicated that they engage in recommending purchases to their friends.

Among the emotional regulation strategies reported by participants, cognitive reappraisal (ER-R: Mean= 29.44, SD= 6.263) was found to be significantly more prevalent than expressive suppression (ER-S: Mean= 16.60, SD= 5.298). 72.1% of participants reported that they would subjectively use female-oriented games as a tool for emotional regulation, with 84.2% of them considering it effective. Additionally, romantic parasocial relationships (R-PSR: Mean= 64.42, SD= 13.066) were perceived to be stronger in the reporting items of PSR.

### 4.2. Research Hypothesis Testing

#### 4.2.1. PSR and the Fulfillment of Emotional Needs

This study employed regression analysis to examine the relationship between parasocial relationships and the fulfillment of emotional needs. The results showed that parasocial relationship intensity (PSR) had a significant positive effect ( $\beta = 0.685$ ,  $p < 0.001$ ) on emotional need fulfillment (EF). Swapping



the positions of the independent and dependent variables, the conclusion still holds significantly: EF had a significant positive effect ( $\beta = 0.409$ ,  $p < 0.001$ ) on PSR.

The results support Hypothesis 1. It suggests that, in female-oriented games, the intensity of parasocial relationships with game characters can positively predict the level of emotional fulfillment experienced by female players. Conversely, the extent to which emotional needs are fulfilled within the game can also predict the strength of parasocial relationships with game characters. There is a mutually reinforcing linear relationship between PSR and EF. Regression data are presented in Tables 1 and 2.

Table 1: Regression statistics for parasocial relationship (PSR) on emotional need fulfillment (EF).

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
PSR	0.685	0.076	0.529	9.041	<0.001

Note. Dependent Variable: EF

Table 2: Regression statistics for emotional need fulfillment (EF) on parasocial relationship (PSR).

Model	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
EF	0.409	0.045	.529	9.041	<0.001

Note. Dependent Variable: PSR

In the design of this study, parasocial relationships and emotional fulfillment included several components: romantic parasocial relationships (R-PSR), relationship responsiveness (RR), and relationship closeness (RC). Accordingly, the study conducted separate regression analyses for each of these components. All the results were statistically significant. PSR had a significant positive effect on RR ( $\beta = 0.238$ ,  $p < 0.001$ ) and RC ( $\beta = 0.482$ ,  $p < 0.001$ ). Additionally, R-PSR also showed a significant positive effect on EF ( $\beta = 0.316$ ,  $p < 0.001$ ), RR ( $\beta = 0.143$ ,  $p < 0.001$ ), and RC ( $\beta = 0.291$ ,  $p < 0.001$ ).

In summary, for female game players both parasocial relationships and romantic parasocial relationships in female-oriented games can positively predict the fulfillment of emotional needs, which includes measures of relationship responsiveness and closeness.

#### 4.2.2. PSR and the Fulfillment of Emotional Needs as Predictors of Purchasing Behaviour

To test hypothesis 2, a regression analysis was conducted to examine the relationship between parasocial relationships (PSR) and purchasing behaviour. Specifically, the analysis investigated the linear relationships between PSR and in-game purchasing (IGP), as well as PSR and out-of-game purchasing (OGP). The results indicate that PSR was a significant predictor of OGP ( $F = 14.861$ ,  $\beta = 0.007$ ,  $p < 0.001$ ), as shown in Table 4. However, it does not have a significant effect on IGP.

Based on this, a regression analysis examining the relationship between romantic parasocial relationships (R-PSR) and purchasing behaviour was conducted. Same to PSR, R-PSR also had a significant positive effect on OGP ( $F = 5.503$ ,  $\beta = 0.002$ ,  $p = 0.020$ ). In contrast, R-PSR had a significant negative effect on IGP ( $F = 5.601$ ,  $\beta = -0.014$ ,  $p = 0.019$ ). Regression statistics are reported in Table 3 and Table 4. The results suggests that, as romantic parasocial relationships intensify, out-of-game purchasing behaviour continues to increase, while in-game purchasing tends to decrease.

The regression analysis of emotional need fulfillment (EF) and purchasing behaviour (OGP and IGP) failed to support Hypothesis 2, as no significant linear relationships were found between EF and OGP, or EF and IGP. Therefore, further regression analyses were conducted on the components of emotional need fulfillment (EF). The results revealed that relationship responsiveness (RR) ( $F = 6.029$ ,  $\beta = 0.012$ ,  $p = 0.015$ ) and relationship closeness (RC) ( $F = 6.952$ ,  $\beta = 0.006$ ,  $p = 0.009$ ) had significant positive effects on OGP, as shown in Table 4. However, none of the components of emotional need fulfillment (EF) were found to significantly predict IGP.

In summary, these results partially support Hypothesis 2. In female-oriented games, the strength of parasocial relationships (both PSR and R-PSR) with game characters positively predicts out-of-game purchasing behaviour. Furthermore, the levels of emotional need fulfillment related to responsiveness and closeness also have positive effects on out-of-game purchasing behaviour. However, with regard to in-game purchases, only romantic parasocial relationships were found to have a significant negative impact.

Table 3: Regression statistics for in-game purchasing (IGP) on the romantic parasocial relationship (R-PSR).

Model	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
R-PSR	-0.014	0.006	-0.161	-2.367	0.019

Note. Dependent Variable: IGP

Table 4: Regression statistics for out-of-game purchasing (OGP).

Model	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
PSR	0.007	0.002	0.257	3.855	<0.001
R-PSR	0.002	0.001	0.160	2.346	0.020
RC	0.006	0.002	0.179	2.637	0.009
RR	0.012	0.005	0.167	2.455	0.015

Note. Dependent Variable: OGP

#### 4.2.3. Testing the Hypothetical Moderation Model and Mediation Model

To identify the covariates that need to be controlled in the mediation and moderation model, an ANOVA analysis was conducted on each group of variables. The results are presented in Table 5. In the models where out-of-game purchasing (OGP) serves as the dependent variable, Game Types were controlled as a covariate. In the models where in-game purchasing (IGP) is the dependent variable, Age, Occupation, and Game Types will be controlled as covariates.

Table 5: ANOVA Analysis.

Factors	Age		Education Level		Occupation		Game Types	
	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
ER-R	2.222	0.053	0.953	0.387	0.951	0.468	0.821	0.484
ER-S	0.775	0.569	6.421	0.002**	1.658	0.121	0.803	0.493
PSR	3.695	0.003**	1.819	0.165	2.161	0.039*	6.346	0.000***



Table 5: (continued).

R-PSR	3.882	0.002**	3.273	0.040*	4.715	0.000***	24.981	0.000***
RC	3.256	0.007**	4.470	0.013*	3.390	0.002*	12.033	0.000***
RR	3.985	0.002**	2.616	0.076	3.715	0.001**	18.000	0.000***
EF	4.030	0.002**	4.096	0.018*	3.635	0.001**	5.769	0.001**
IGP	3.411	0.006**	1.613	0.202	2.734	0.010**	4.219	0.006**
OGP	0.706	0.620	0.785	0.457	1.054	0.395	8.130	0.000***

Note. \* p<0.05; \*\*p<0.01; \*\*\*p<0.001

The results of the correlation analysis are presented in Table 6. The correlation between PSR and IGP was not significant, failing to meet the necessary conditions for mediation and moderation analysis. Thus, the hypothetical model with PSR as the independent variable and IGP as the dependent variable was excluded from model testing. Other variables in the hypothetical model satisfied the necessary conditions for mediation and moderation analysis.

Table 6: Correlation analysis between variables.

	ER-R	ER-S	PSR	R-PSR	RC	RR	EF
ER-R	1.000						
ER-S	0.233**	1.000					
PSR	0.263**	0.123	1.000				
R-PSR	0.101	0.096	0.674**	1.000			
RC	0.138*	0.065	0.623**	0.766**	1.000		
RR	0.106	0.083	0.618**	0.754**	0.843**	1.000	
EF	0.289**	0.248**	0.529**	0.497**	0.526**	0.486**	1.000
IGP	-0.051	0.059	-0.095	-0.161*	-0.012	-0.069	-0.090
OGP	0.089	0.046	0.257**	0.160*	0.179**	0.167*	0.129

\*Correlation is significant at the 0.05 level (two - tailed).

\*\*Correlation is significant at the 0.01 level (2 - tailed).

To test whether the effect of parasocial relationship on purchasing behaviour differed by emotion regulation strategies, two emotion regulation strategies: cognitive reappraisal (ER-R) and expressive suppression (ER-S) were tested as moderators. The results indicate that the moderating effect of ER-S is not significant.

In contrast, ER-R can serve as a significant moderator between PSR and OGP, because the interaction between PSR and ER-R was statistically significant ( $B = -0.034$ ,  $se = 0.012$ ,  $p = 0.003$ ). As shown in Table 7, ER-R generally exhibits a positive moderating effect. However, this positive moderating effect diminishes as the level of ER-R increases. High levels of ER-R had a negative moderating effect on OGP ( $B = -0.094$ ,  $SE = 0.107$ ). These results align with hypothesis 3. The moderation model is presented in Figure 2.

This suggests that in female-oriented games, the effect of parasocial relationships on out-of-game purchases is associated with the level of cognitive reappraisal strategies employed by players. For players who employ lower levels of cognitive reappraisal strategies during emotional regulation, parasocial relationships were more effective in positively predicting out-of-game purchases. Conversely, for players utilizing higher levels of cognitive reappraisal, their parasocial relationships negatively affect out-of-game purchasing behavior.

Table 7: Moderation Analysis.

	<i>R-sq</i>	<i>df</i>	<i>p</i>
Model Summary	0.426	4.000	<0.001
	<i>B</i>	<i>SE</i>	
ER-R (High Level)	0.337	0.102	
ER-R (Mean)	0.121	0.075	
ER-R (Low Level)	-0.094	0.107	

Note. Independent Variable: PSR, Dependent Variable: OGP, Moderator: ER-R

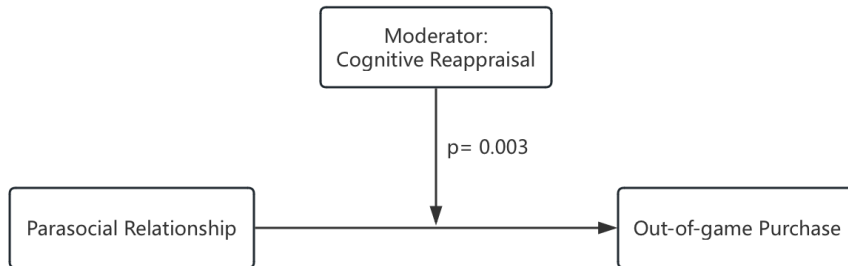


Figure 2: Moderation model of emotion regulation strategy (cognitive reappraisal).

To examine whether the fulfillment of emotional needs mediates the relationship between parasocial relationships and purchasing behaviour, a simple mediation analysis was conducted among the variables. The results indicated that the mediation model is valid only when romantic parasocial relationships (R-PSR) serve as the independent variable and in-game purchasing (IGP) as the dependent variable. Age, Occupation, and Game Type were controlled as covariates. Further testing into the mediating role of emotional need fulfillment and its components revealed that only relationship closeness (RC) significantly mediates the relationship between R-PSR and IGP.

The results showed a significant indirect effect of romantic parasocial relationship (R-PSR) on in-game purchase (IGP) through relationship closeness (RC) ( $B = 0.019$ ,  $SE = 0.008$ ,  $BCa95\% CI [0.004, 0.033]$ ). The direct effect of romantic parasocial relationship (R-PSR) on in-game purchase (IGP), absent of the mediator, was also found to be significant ( $B = -0.029$ ,  $SE = 0.009$ ,  $95\% CI [-0.047, -0.011]$ ,  $t = -3.159$ ,  $p = 0.002$ ). Therefore, the results evidence that RC partially mediated the relationship between R-PSR and IGP, supporting hypothesis 3. Mediation summary statistics are presented in Table 8. The statistical diagram for the mediation model is presented in Figure 3.

Notably, in this mediation model, the indirect and direct effects have opposite signs, indicating the presence of a competitive mediation or suppression effect. This suggests that the mediator may partially offset the direct effect of the independent variable on the dependent variable, resulting in an opposite-directional effect [19]. This kind of inconsistent mediation model needs further exploration in future research.

Table 8: Mediation Analysis.

	<i>Effect</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
a-path	R-PSR-->RC	0.286	0.018	15.828	<0.001
b-path	RC-->IGP	0.066	0.024	2.739	0.007
c'-path (Direct Effect)	R-PSR-->IGP	-0.029	0.009	-3.159	0.002
Indirect Effect	R-PSR-->RC-->IGP	0.019	0.008	--	--
Total Effect	R-PSR-->IGP	-0.011	0.006	-1.657	0.001

Note. Independent Variable: R-PSR, Dependent Variable: IGP, Mediator: RC

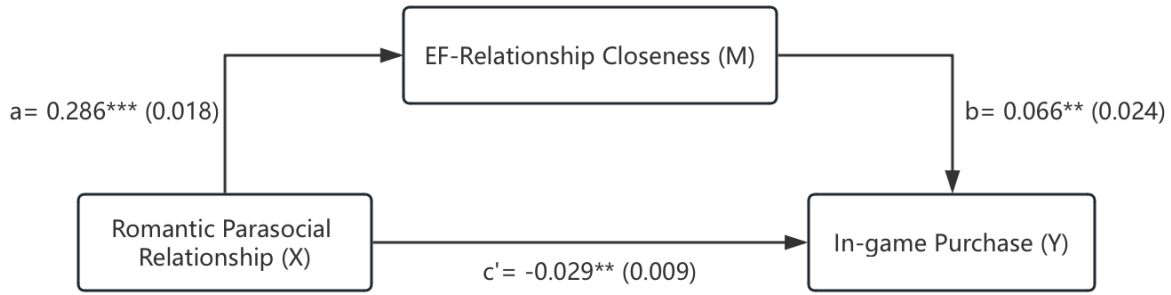


Figure 3: Mediation model of emotional needs fulfillment (relationship closeness).

Note. Indirect effect of X on Y ( $a*b$ )= 0.019 (0.008); Total effect of X on Y= -0.011 (0.006); \*\* $p<0.01$ ; \*\*\* $p<0.001$ .

## 5. Discussion

Previous research discussed the application of parasocial relationships in social media [10, 12, 14]. This study mainly focuses on parasocial relationships in the gaming context. Consistent with previous research, there is a strong correlation between parasocial relationships and the fulfillment of emotional needs. Through establishing strong parasocial relationships with game characters, female game players can satisfy emotional needs effectively, including receiving responsiveness and closeness. This kind of emotional fulfillment, in turn, strengthens their relationships with the game characters. Parasocial relationships evolve into romantic ones over time, playing a role similar to traditional two-sided relationships [9, 12]. Within the player's social network, the effectiveness of these virtual one-sided relationships raises the question of whether parasocial relationships can genuinely serve as one-to-one substitutes for traditional two-sided relationships [12].

There is evidence supporting the link between parasocial interactions and adverse psychological states such as loneliness [20]. Previous studies also discussed that social anxiety can contribute to more parasocial interactions in otome games [9]. The strength of romantic parasocial relationships was found to be directly related to emotional satisfaction in real-life romantic relationships [21]. Therefore, a promising future research direction would be investigating whether women in unhealthy psychological states turn to parasocial relationships due to dissatisfaction with traditional two-sided relationships. Developing romantic relationships in female-oriented games may reflect dissatisfaction with real-life intimate relationships [21]. This may help explain certain cases of gaming addiction and contribute to understanding the impact of female-oriented games on mental health.

In this study, most participants indicated that they subjectively use female-oriented games as a means of emotion regulation, considering it effective in most cases. This adds to previous research [6], which found that adolescent males use gaming to manage emotions of anger. The findings of the present study support that female gaming behaviour may serve a similar purpose. Additionally, participants in this study reported generally higher levels of cognitive reappraisal as an emotion regulation strategy. Moderation analysis further revealed that cognitive reappraisal moderates the relationship between parasocial relationships and purchasing behaviour. This aligns with findings by Villani et al., who argued that video games can facilitate emotion regulation by fostering cognitive reappraisal skills through controlled exposure to negative emotions [22]. However, other studies also suggest that gaming can suppress emotional expression. Future study needs to explain the extent to which female-oriented games can support emotion regulation for female players.

Gong et al. found that romantic parasocial interactions in otome games enhance in-game purchase intentions [9]. However, the present study partially refutes this view, revealing that as romantic parasocial relationships deepen, actual in-game purchase tends to decrease, while out-of-game

purchases increase. Over half of the participants reported a preference for purchasing peripheral goods over in-game items. Since developing romantic parasocial relationships requires time, reduced in-game purchasing may be linked to the burnout of extended gameplay. This may also be explained by a decline in user stickiness. The perceived in-game value for players may reach an upper limit, leading them to seek compensation through out-of-game purchases. From a game developer's perspective, offering peripheral products and offline events may help retain their customer base and sustain long-term purchasing behaviour in female-oriented games.

The examination of emotional need fulfillment also points to out-of-game purchases. The fulfillment of emotional needs, specifically relationship responsiveness and closeness, significantly predicts an increase in out-of-game purchases but not in-game purchases. The emotional value provided by female-oriented games can serve as an effective marketing tool for developers if they strategically leverage related out-of-game consumption opportunities.

This study also examined the mediator and moderator in the model of parasocial relationships and gaming purchases. Cognitive reappraisal emerged as a significant moderator, with higher levels of cognitive reappraisal weakening the enhancing effect of parasocial relationships on out-of-game purchases. In fact, high cognitive reappraisal levels negatively suppressed out-of-game purchasing. This finding may be related to Emotion Regulation Consumption (ERC) proposed by Kemp et al., which refers to a kind of consumption behaviour aiming at managing and repairing emotions in the short term [23]. Their research revealed the extent to which ERC is associated with one's cognitive reappraisal abilities. Individuals who utilize cognitive reappraisal are better equipped to eliminate negative emotions and therefore may rely less on hedonic consumption for emotion regulation. Conversely, those with lower cognitive reappraisal skills tend to engage more in ERC [23]. These insights help to understand the moderating role of cognitive reappraisal in female-oriented games.

Another significant finding is that the emotional need for closeness mediates the relationship between romantic parasocial relationships and in-game purchases. Prior research on romantic parasocial relationships has highlighted that emotional closeness is more important than physical attraction, a conclusion that this study further substantiates [21]. Although in-game purchase tends to decrease as romantic parasocial relationships strengthen, closeness can serve as a competitive mediator. Through the emotional fulfillment of relationship closeness, romantic parasocial relationships can indirectly exert a positive effect on in-game purchases. This finding offers important insights for developers of female-oriented games. To sustain long-term in-game purchases, it is important to emphasize closeness in character design and game interaction design, as this can enhance players' romantic parasocial relationships with game characters while simultaneously promoting continued growth in in-game purchases.

## 6. Conclusion

This study examined the roles of emotion regulation, emotional fulfillment, and parasocial relationship in female-oriented games, as well as their implications for consumer behaviour. Focusing on the mental health of female players, the study discussed the emotion regulation strategies used in female-oriented games. The findings also provide constructive suggestions for game developers on how to leverage parasocial relationships and the emotional needs of players to increase consumption. However, this research was limited to female gaming behaviour in mainland China and may not offer reliable insights applicable to other cultural contexts. Furthermore, most participants were otome game players, indicating a need for future research on other types of female-oriented games. As a gender group often overlooked in previous studies, the gaming behaviour of female players and the psychological processes underlying them merit more discussion in future research.

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