The Impact of Playing the Otome Game on Single Women's Interest in Real-life Romantic Relationships

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Abstract: Otome games have gained popularity among women, offering a space to fulfill their emotional and romantic desires. This study explores how playing Otome games may reduce single women's interest in real-life romantic relationships through the lens of evolutionary psychology. We designed a study with 200 single Chinese women aged 18-35 who have not previously played Otome games, to play an Otome game called *Love and Deepspace* for three months and we will record their gaming time and monetary expenditure. The study aims to test the hypothesis that increased engagement in Otome games, measured by time and money spent, negatively correlates with participants' interests in real-life romantic relationships. Our research examines how supernormal stimuli—idealized traits in virtual romantic partners— appeal to female mating preferences, contributing to an evolutionary mismatch. This mismatch may have significant implications for how modern virtual dating experiences shape romantic behaviors, with potential effects on societal trends such as declining interest in real-life romantic relationships.

Keywords: Otome games, virtual love, supernormal stimulus

1.   Introduction

Recently, there has been a noticeable decline in the desire for romantic relationships in Asia. In the *Survey Report on Marriage and Family Formation 2015*, Yamada mentioned that forty percent of surveyed single people did not want a romantic partner. In contrast, the number of people who wish to have virtual love has recently increased. The survey found that 33.1% of unmarried women in their twenties reported being in love with virtual characters [1]. One popular way to engage with fictional lovers is through Otome game, a genre of dating simulation games designed for female players, which has become popular worldwide [2]. Unlike real-life relationships, which often come with emotional risks and challenges [2], Otome games give females a safe environment where they can freely explore their romantic and sexual fantasies [3]. This virtual experience has attracted many women, drawing them deeper into the world of virtual love.

1.1. Female's mating preference

From an evolutionary psychology point of view, women's mating preferences typically involve men who can provide physical protection, display masculine features, physical attractiveness, high social status, and most importantly, show a willingness to invest emotionally through traits like love and commitment [4]. In the book *Warrior Lovers,* the authors cite statistics from 45 best-selling romance novels, noting that heroes are typically tall (over six feet) and exhibit strong emotional connections with the heroine, desiring her uniquely and wanting to protect her with their lives [5].

When we examine the three main male protagonists in the popular Otome game *Love and Deepspace*, we find that all three male characters align closely with women's mating preferences. They are all 6 feet or taller, with masculine features and fit bodies. As for their occupations, they are all powerful characters in their own fields. Finally, they all deeply love the heroine. However, having three men with such perfect, even exaggerated traits, all devoted to one woman is nearly impossible in real life. These idealized portrayals contribute to the female players' enthusiasm for this game, illustrating an evolutionary psychology concept known as supernormal stimuli.

1.2. Supernormal stimuli in virtual love

A super stimulus is an exaggerated version of a stimulus that can cause a stronger response [6]. In a classic example of supernormal stimuli, the Jewel beetles experiment, Gwynne and Rentz [7] observed that male beetles always attempted to mate with discarded beer bottles on the side of the road in Australia. These male beetles showed more interest in large, brown, and glossy beer bottles than in actual female beetles. Gwynne and Rentz [7] explained that the color and glossiness of beer bottles were like female beetle elytra and dimples on bottle surfaces were mistaken for female wing textures. In addition, beer bottles were much larger than female beetles, so they were regarded as "super females" by male beetles. These beetles kept trying to mate with beer bottles, which led to population decline as males wasted time and energy on beer bottles until death.

In the context of virtual love, Karhulahti and Välisalo [8] summarized that many fictional characters are designed with handsome looks, sexy body features, and perfect personalities to cater to fans' preferences. In fact, sexual super stimuli are very common in media, comic books, and films. For example, compared to actual humans, women in DC or Marvel stories have smaller waist-to-hip ratios which make them curvier [9]. In contrast, men in DC or Marvel stories have a bigger shoulder-to-waist ratio so that audiences can get a better visualization of upper body muscularity. Rather than only superior in physical looks, fictional characters have even more advantages in providing emotional value. Female gamers are allowed to take the dominant role in the romantic scenario transcending reality, while men are the objects of their gaze [10]. Moreover, gamers do not have to worry about being hurt or betrayed by a fictional character [8], which is quite tempting to insecure people when they want to be in control of a relationship. Therefore, it is very natural for women to be attracted to fictional heroes in Otome games because of both the physical and mental super stimuli.

1.3. Virtual love vs. real-life love

Special terms have emerged since the 2000s from online communities to describe the feelings towards virtual lovers: fictosexuality, fictoromance, and fictophilia, which mean sexual attraction, romantic attraction, and strong, lasting love for fictional characters, respectively [8]. Studies exploring these phenomena reveal that these emotions extend beyond just media consumption, developing into deep love and attachments to fictional characters over time.

According to The Media Equation [11], human perceptions do not distinguish between stimuli from the real world and those from the media. When we encounter simulated social situations, our brains still react in ways similar to how we would respond to real human beings [11]. The popularity

of Otome games illustrates an evolutionary mismatch, where the modern, simulated environment presents supernormal stimuli—such as idealized partners with exaggerated traits—that our ancestral brains did not evolve to handle, potentially disrupting real-life romantic and reproductive behaviors.

Previous studies have explored the phenomenon of virtual love across different genres, disciplines, and cultural contexts. For example, Karhulahti & Välisalo [8] conducted qualitative research about the ideas of fictophilia in English-speaking countries through the lens of media studies, psychology, and cultural studies. Yamada's [1] research examined how Asians, especially Japanese females, engage in virtual love to satisfy their romantic desires from a sociological perspective. Both Zhao & Wu [12] and Karhulahti & Välisalo [8] explored idol culture as a form of virtual love and elaborated on its implications on media studies. While many studies have explored virtual love through fictional characters in books and movies, our research contributes a new dimension by focusing on how Otome games influence Chinese single women's real-life romantic interests through the framework of evolutionary psychology.

1.4. Hypothesis

In real-life romantic relationships, individuals tend to downplay the attractiveness of others and focus on their current partner, suppressing their search for alternative mates [13]. Similarly, when female players engage with virtual romantic partners in Otome game, who often designed with exaggerated or idealized traits, their willingness to seek real-life romantic relationships may diminish. Furthermore, given that individuals have finite time and resources, investment in virtual relationships—particularly in terms of time and money—may further reduce their involvement in real-life romantic pursuits.

Our research hypothesis is that engagement with virtual dating games for female players can negatively impact their interest in real-life romantic relationships. We will define engagement using two main factors: time spent, and money spent. To test this hypothesis, we have developed the following hypotheses and designed an experiment:

The more time female players spend on virtual dating games, the less interested they are in real-life romantic relationships.

The more money female players spend on virtual dating games relative to their income, the less interested they are in real-life romantic relationships.

2. Methods

2.1. Participants & materials

We will recruit 200 single Chinese women aged 18-35 who have not played Otome games before. The study will use the most recent Otome game hit, "*Love and Deepspace,*" as the platform. To ensure sufficient engagement, participants will be required to play at least 10 minutes a day for three months, with no upper time limit. As an incentive, we will pay each participant 1000 RMB if they manage to play for over 10 minutes for at least 80 days during the 3-month period.

2.2. Measures

2.2.1. Pre-study questionnaire

Before the study begins, we plan to record each participant's monthly salary. They will complete a questionnaire assessing their interest in having a real-life romantic partner (see Table 1).

Table 1: Real-life romantic relationship interest scale

Dimension	Question	Score Description	Score (1-5)
Behavioral Intention	How frequently do you participate in social events to meet potential romantic partners?	1 = Never, 5 = Very frequently	
	How often do you initiate contact or arrange dates with potential romantic partners?	1 = Never, 5 = Very often	
Emotional Investment	How much effort are you willing to put into developing a meaningful real-life romantic relationship?	1 = Very little effort, 5 = A great deal of effort	
	How important is it for you to build a deep connection with a real partner?	1 = Not important at all, 5 = Extremely important	
Status Satisfaction	How satisfied are you with your current single status?	1 = Very satisfied, 5 = Very dissatisfied	
	How comfortable are you with the prospect of staying single long-term?	1 = Very comfortable, 5 = Very uncomfortable	
Total Score	= Behavioral Intention + Emotional Investment + Status Satisfaction	Sum= (6-30 points)	

2.2.2. Daily update

Over the three-month period, we plan to record participants' daily game-playing time, confirmed by screen time data from their phones, and their daily monetary expenditure if they do spend money on it.

2.2.3. Post-study questionnaire

At the end of the three months, participants will complete the same questionnaire again to assess any changes in their interest in having a real-life romantic partner. The questionnaire we use includes three dimensions: Behavioral Intention, Emotional Investment, and Status Satisfaction. The scores for all dimensions are summed to get a total score. The lower the score, the less interest they have in having a real romantic partner.

2.3. Data analysis

We will conduct multiple linear regression analysis to investigate potential negative correlations between various predictor variables and the outcome variable as outlined below:

2.3.1. Predictor variables

Total Time spent on the game (T): The total number of hours participants spend playing the game over the study period.

Money Spent / Income Ratio (M): This ratio is calculated by dividing the total expenditure on the game by the participant's total income over the 3 months.

Interaction of Time and Money Spent (T*M): These variable tests whether the combined effect of time and money spent on the game has a greater impact than their individual effects.

Squared Values of T and M (T^2, M^2): These variables examine the potential diminishing marginal effects, assessing whether the impact of time and money spent on interest level change decreases as the amount of time or money increases.

2.3.2. Outcome variable

Interest Level Change: This refers to the difference between the initial and final scores from the

Questionnaire measured over a 3-month period.

3.　Results

For our hypotheses to be supported, we expect the regression coefficients to be negative and significant. While we anticipate a negative correlation, the inclusion of interaction and squared terms allows us to explore the nature of this relationship in more detail, ensuring a more precise understanding of how time and money spent on virtual dating games influence female players' real-life romantic relationship interest. As a result, we can end up with three distinct outcomes.

I. The more money and/or time women invested in Otome game, the less interest they show in real-life romantic relationships.
II. The more money and/or time women invested in Otome game, the more interest they show in real-life romantic relationships.
III. There are no significant changes in real-life romantic interests before and after playing the Otome game.

4.　Discussion

We will examine the relationship between single women's engagement (time and money spent) in Otome games and their interest in real-life romance. If the results show a negative correlation between these variables, it will support our hypothesis. This finding could contribute to the existing body of research on the impact of virtual love on real-life romantic interest. Similar results were also found in research by Wu et al. [14] that romantic video involvement was negatively correlated with players' interest in real-life dating and marriage. When young women treat romantic relationships with fictional characters as compensation rather than a supplement for real-life romantic relationships [15], it leads to low marriage rates and fertility rates.

If the results demonstrate a positive correlation between women's engagement in Otome games and their interest in real-life romance, it will reject our initial hypotheses. The results would suggest that playing Otome game can stimulate women's interest in developing a romantic relationship in real life. Indeed, the idealized male characters and sweet atmosphere in Otome game may improve women's expectations of encountering a beautiful romance in real life. Furthermore, Karhulahti & Välisalo [8] pointed out that for young women who have little or no romantic or sexual experience before, dating with Otome game heroes may serve as a practice or simulation of stepping into a real romantic relationship. Therefore, virtual love might not necessarily reduce real-life romantic interest but could instead help woman experience exciting feelings in romantic settings [8].

If there are no significant differences in real-life romantic interests before and after playing the Otome game, it would suggest that playing Otome game would not have an influence on single women's real-life romantic interests. This could be supported by previous research done by Zhang and Fung [16]. In their research of Chinese girls' music fandom, they found that although these girls see their idols as boyfriend or husband, they can rationally distinguish between reality and fantasy, maintaining this infatuation to a certain extent [16]. Therefore, it could explain why engaging in virtual romance does not necessarily diminish women's interest in real-life romance.

While our research provides valuable insights, it still has some limitations. We plan to recruit 200 single women from China to participate in the study, while the sample size may still not be enough to generalize the findings. Given the widespread popularity of Otome games across East Asia, future studies could expand the sample to include participants from other regions such as Korea and Japan. This would allow us to examine whether the influence of Otome games on women's interest in real-life romantic relationships is consistent across different cultures. Additionally, the wide age range in this study, covering women from 18 to 35, could be a potential limitation. Women in this age group

may have different dating experiences, interests, and preferences, which potentially impact the reliability of the results. To address this, future research could divide participants into narrower age groups, such as 18-23, 24-29, and 30-35, allowing for an examination of between-group differences.

5. Conclusion

Our study suggests that increased time and money spent on Otome games may reduce women's interest in real-life romantic relationships. This research contributes to the understanding of how supernormal stimuli—exaggerated traits found in virtual romantic partners—can engage female mating preferences in ways that real-life partners may not, highlighting an evolutionary mismatch. Future research should explore how these evolutionary mismatches between virtual and real-life romantic stimuli might impact broader societal trends, such as declining fertility and marriage rates, especially as these virtual environments continue to develop across different cultures.

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