

# Yearning for Love: Exploring the Interplay of Parasocial Romantic Attachment, Loneliness, and Purchase Behavior Within Dating Simulation Games

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**Keywords:** Dating Simulation Games, Romantic Parasocial Relationships, Romantic Loneliness, Free-to-Play, Purchase Behavior.

**Abstract:** Female-oriented dating simulation games (i.e., games centered around the romantic relationships between a female player and its game characters) have grown increasingly popular internationally and developed into a profitable business model. The genuine feelings of love players develop for these virtual characters (i.e., parasocial love), particularly the motifs behind such attachments, have garnered rapid curiosity. Applying the parasocial compensation hypothesis, this study conducted an online survey among female players of the free-to-play dating simulation game *Mystic Messenger* to explore romantic loneliness as a motivator for players' parasocial love and its impact on players' purchasing behavior. The correlation analysis revealed a weak negative relationship between romantic loneliness and parasocial love, indicating a complementary rather than compensatory function of such attachments. Further, while the strength of para-romantic feelings did not drive in-game spending, romantic loneliness was negatively associated with willingness to invest money. These findings suggest that other motivations drive real-money investments in romance-themed games, highlighting the complexity of player behavior in this context.

## 1 INTRODUCTION

More than 39000 \$ – that was the worth of a recent LED advertisement a Chinese women splurged on her 'boyfriend', one of the love interests in the popular mobile game *Mr Love: Queen's Choice* (PaperGames 2017). Clearly, the world of love has gone digital in a spectacular way (Huang, 2018); not just in Japan, where these so-called dating simulation games (short: dating sims) first originated from (Schwartz, 2018). In fact, dating sims have become an international phenomenon, prompting players to spend increasingly more time and money on nurturing these so-called parasocial romances – one-sided romantic feelings people develop for media characters (Tukachinsky, 2010). Indeed, it seems like players have come to deeply care about these fictional relationships, openly swooning over their virtual love interests as if the intimacy provided by them was real (Schwartz, 2018). Amongst rising tendencies of women specifically to

stay single and independent, the growing popularity of dating sims have raised concerns on their potential function as a replacement for real-life intimacy and affection.

Whether individuals turn to media figures to compensate for a deficit in their social lives has long been controversially discussed. While studies revealed that these so-called parasocial bonds cannot compensate for unmet social needs, e.g., (Canary and Spitzberg, 1993; Chory-Assad and Yanen, 2005; Rubin et al., 1985), most of the existing research focused on traditional mass media personalities, e.g., (Hu et al., 2021; Wang et al., 2008), or failed to align specific parasocial experiences with distinct unmet needs, e.g., (Rubin et al., 1985; Wang et al., 2008). Dating simulation games have largely been overlooked in these contemplations despite their unique appeal. As players become active participants in the simulated romance, these games may afford gratifications that traditional mass media characters cannot provide. This paper aims to close this research gap by looking at compensatory effects of parasocial experiences from the perspective of interactive video games. To do so, we con-

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ducted a quantitative survey addressing the following research questions:

*RQ1: Which role does the longing for romantic intimacy play in developing romantic feelings for dating sim characters?*

*RQ2: How do romantic loneliness and romantic feelings for the dating sim characters relate to players' in-game purchasing behavior?*

RQ1 aspires to explore what draws individuals to engage in romantic parasocial relationships with virtual characters in dating simulation games, more precisely those targeted at a female audience. By doing so, it adopts the angle of parasocial compensation theory by focusing specifically on feelings of romantic loneliness, that is, an inherent desire for love and intimacy, and their influence on feelings of parasocial love. Moreover, considering the immense commercial success of some titles within the niche, RQ2 strives to unveil how either of these feelings may affect players' willingness to invest real money in these games.

Against the backdrop of the research questions, we first discuss the mechanisms of dating simulation games as well as the phenomenon of romantic parasocial relationships and its related concepts. Next, we explain the utilized methodology before detailing the results of the analysis. After discussing key findings, this paper concludes with a summary and research outlook.

## 2 RESEARCH BACKGROUND AND HYPOTHESES

The rise of interactive video games has altered how individuals can get involved with fictional media characters – especially romantically. Among these games, dating sims have enabled players to cultivate rich and meaningful virtual romances with these game characters. Once these feelings spill over into real-life, researchers (Tukachinsky, 2010; Waern, 2010) refer to them as parasocial love which may closely resemble experiences of traditional romantic relationships – in their development, dissolution, or gratifications. Hereafter, the concept of female-oriented dating sims, the notion of romantic parasocial relationships as well as their possible role in romantic need fulfillment will be looked at more closely, before deriving our research hypotheses based on the existing literature.

### 2.1 Female-Oriented Dating Simulation Games

Female-oriented dating simulation games are romance-themed single player games that blend elements of simulation games with characteristics of visual novels (Saito, 2021). They typically revolve around a playable female main character (MC) and a selection of attractive – and mostly male – romanceable non-playable characters (NPCs), so-called love interests. The purpose of these games is for the player to win over the affections of one or more of these love interests by interacting with them through pre-scripted dialogue. These interactions often hold heavy romantic connotations and are interspersed with accompanying romantic scenes that slowly build up the virtual relationship. Through their chosen responses, players can shape the love story and experience multiple idealized relationship scenarios with their virtual lovers (Schwartz, 2018; Taylor, 2007).

Although originally limited to the Japanese market, the advances of the Internet and emergence of new distribution channels have significantly driven the international success of dating sims. In 2020, the niche counted roughly 22 million active players worldwide, ramping up significant revenues while doing so (Russon, 2020). Leading Japanese developer Voltage, for instance, recently reported annual earnings of roughly 33 million \$<sup>1</sup> across its more than 100 dating sim titles (Voltage Inc., 023a; Voltage Inc., 023b). Notably, most modern dating sims employ a free-to-play or freemium model which enables players to make in-game purchases (i.e., micropayments) at different points in the game. These in-app purchases typically involve ways to progress faster in the game, for example, by granting the players access to a certain number of chapters a day, speeding up gameplay or boosting certain stats that will help to successfully pursue the chosen romantic route (Ganzon, 2022). At the same time, players can enrich the virtual relationship by unlocking additional content such as new interactions like phone calls, messages, or romantic dates. Some games even offer epilogues or additional side stories which allow players to extend the relationship beyond the initial playthrough of the main story. As most of these purchases are character-focused, they require the player to have formed some sort of attachment to these characters (Ganzon, 2022). In some ways, then, players' love for their virtual boyfriend has become a commodity in these games

<sup>1</sup>Earnings of 5392 million Yen taken from official Voltage financial highlights and converted to \$ (exchange rate on January 17: 1 Yen = 0,0068 \$) for easier comparability.

as females invest increasingly more money into nurturing the relationships with these fictional characters.

## 2.2 Romantic Parasocial Relationships

How people form emotional connections to media characters has been a central theme in media and communication research for many years. These attachments were coined parasocial relationships (PSR) (Horton and Wohl, 1956). PSR are genuine feelings people develop for media characters throughout a series of individual encounters (Liebers and Schramm, 2019). They typically manifest in a sense of intimately knowing, understanding, and caring for the character, as well as thinking or talking about them outside of reception. Because these bonds are asymmetric and lack reciprocity, they typically remain bound to the fantasy of the audience (Döring, 2013).

Although parasocial relationships have often been compared to friendships, Tukachinsky called for a more nuanced treatment of such attachments, introducing romantic parasocial relationships (PSRR) to conceptualize the feeling of being in love or being infatuated with certain media characters (Tukachinsky, 2010). Compared to amicable parasocial bonds which relate to feelings of trust or being fond of the character, romantic parasocial relationships are motivated by strong romantic affection as well as sexual and emotional attraction towards the media figure (Tukachinsky, 2010). The more intense these feelings are, the more effort and time are spent on these relationships, often involving a significant amount of idealization and fantasizing about being with the romantic parasocial partner (Erickson et al., 2018). These parasocial partners can be real-life celebrities or actors but can extend towards virtual game characters as well (Tukachinsky, 2010). Indeed, scholars analyzing online fan discussions have found that players of role-playing video games regularly mentioned genuine feelings of love and affection for their non-playable counterparts regardless of them being only visual representations of real people (Coulson et al., 2012; Mallon and Lynch, 2014). Some players even noted that these feelings had prompted them to extend additional effort into their gameplay (Burgess and Jones, 2020).

At first glance, PSRR with media characters may appear to have little in common with romantic attachments in real life. After all, genuine reciprocated love and affection as well as physical dimensions of romance remain entirely out of reach – especially where fictional characters are concerned (Karhulahti and Väiläsalö, 2020). Yet, romantic parasocial relationships have shown several astounding parallels to

interpersonal relations in how they are developed and maintained (Tukachinsky and Stever, 2019). Like with social relations, initial attraction to the media character is of particular importance, especially when it comes to romantic interests (Sphancer, 2014; Tukachinsky, 2010). Frequent exposure, as well, has been found to be essential for parasocial bonds to form (Gleich, 1997). As people grow to learn more about the character, these experiences add up and create a shared history (Branch et al., 2013; Hartmann, 2016a). Similar values, experiences and backgrounds further contribute to strong emotional responses towards these characters (McPherson et al., 2001; Turner, 1993), making these relationships feel “very human, very warm, and very caring” (Meyrowitz, 1994). Not surprisingly, the dissolution of these bonds can elicit strong negative responses akin to distress upon break-up experiences in real life (Eyal and Cohen, 2006).<sup>2</sup>

Unlike real-life relationships, however, romantic parasocial relationships bear hardly any risks and harbor little to no obligations (Schiappa et al., 2011). As individuals have full control over the relationship and can engage with different types of characters, these bonds may be an easy and appealing way for wish fulfillment without the pitfalls of real-life romances like fear of rejection or infidelity (Caughy, 1986). Dating sims, specifically, offer a canvas where romantic relationships can be quickly cultivated with minimal effort. The players have full agency over their virtual romances and can curate relationships on their own terms.

## 2.3 Parasocial Compensation Hypothesis & Impact on Purchasing Behavior

People possess an inherent desire for love and intimacy, a longing ultimately fulfilled by a committed romantic partnership. Yet, if this love appears fickle or temporarily unavailable, people may find other means to stave off unmet romantic needs (Baumeister and Leary, 1995). Considering the close resemblance to interpersonal relationships and the emotional responses to media characters, one such alternative may be afforded by engaging in romantic parasocial relationships with dating sim characters (Gardner and Knowles, 2008). Indeed, the parasocial compensation hypothesis assumes that lonelier people are more

<sup>2</sup>Dissolution of parasocial bonds, typically referred to as parasocial break-up, may occur when a character dies, the media is discontinued or completed. In such cases, the bond is no longer being reinforced and be cut abruptly or fizzle out (Eyal and Cohen, 2006).

likely to develop stronger bonds with media figures to compensate for unmet social needs (Hartmann, 2016b). In the context of romantic parasocial phenomena, this loneliness may be understood as romantic loneliness – a yearning for romantic intimacy that is caused by deficits in people’s love lives, for example, due to an unsatisfying partnership or the overall lack of a romantic partner (Hu et al., 2021).

While numerous studies have aimed – and failed – to find evidence for the parasocial compensation hypothesis in the broader sense of parasocial phenomena and loneliness, e.g., (Canary and Spitzberg, 1993; Chory-Assad and Yanen, 2005; Rubin et al., 1985), only few scholars have considered this notion from the perspective of romance and its related needs. (Wang et al., 2008), for instance, compared distinct loneliness dimensions and how they interacted with parasocial experiences with mass media personae. Yet, despite this more nuanced undertaking, they found no evidence for compensatory effects with respect of romantic loneliness. (Hu et al., 2021) later expanded on this approach and investigated romantic loneliness in the specific context of romantic parasocial phenomena. Across a sample of Chinese students, they anticipated that romantic feelings for the chosen parasocial partner would be more pronounced for romantically lonely participants. Against these expectations, however, the alignment of these dimensions did not confirm romantic deficits to be a motivator for parasocial love. On the contrary, it was found, that less romantically lonely respondents developed stronger attachments and more often fantasized about them. These implications may point to complementary rather than compensatory functions of parasocial relationships regardless of their nature (Wang et al., 2008). Notably, however, both studies either applied a more generalized understanding of parasocial relationships (Wang et al., 2008) or focused exclusively on traditional media characters (Hu et al., 2021). In contrast to traditional mass media, romantic relationships in dating sims are actively experienced with characters designed to cater to romantic fantasies without any risks involved. In this vein, players experiencing deficits in their love lives may be more susceptible to the affection of these characters to compensate for unpleasant or insufficient romantic encounters in the real world. Therefore, it is hypothesized:

*H1: Players high in romantic loneliness exhibit stronger parasocial love for dating sim love interests.*

Compared to dating or married individuals, people without a romantic partner are more sensitive to suffering romantic loneliness (Adamczyk, 2016; Bernardot et al., 2011). In view of this, single players may

be more inclined to compensate for unmet romantic needs by seeking romantic relationships in dating simulation games. (Adam and Sizemore, 2013), as an example, found that romantic parasocial relationships with mass media personae provided benefits not unlike those gained in real-life partnerships. These benefits included feeling overall happier, feeling better about themselves or less lonely and increased the more an individual was invested in the romance with the media persona. Interestingly, singles reported to draw stronger benefits from their parasocial partner than their dating counterparts. Likewise, (Liebers, 2022) observed that romantic parasocial relationships were stronger for non-dating individuals and those reporting less satisfaction in their current partnership. This suggests that in the absence of a (satisfying) romantic partner, individuals may look towards media characters to derive certain romantic gratifications. Consequently, it seems reasonable to argue that players currently not in a romantic relationship more heavily rely on romantic attachments to their virtual love interests to alleviate feelings of romantic loneliness than dating players. Thus, it is assumed that:

*H2: There is a difference in the relationship between romantic loneliness and parasocial love for dating and non-dating players.*

When players develop strong romantic feelings for characters in games they play, they experience a heightened sense of emotional investment. This emotional investment can lead to a desire to enhance their gameplay experience and nurture the bond with their virtual lover (Mallon and Lynch, 2014). Many modern dating sims are specifically designed to offer in-game purchases tied to elevating the romantic experiences in the game. For example, by positively influencing the relationships or offering additional content to cater to the provided fantasy (Ganzon, 2022). In pursuit of this fantasy, players may not stop at simply immersing themselves into these stories but actively attempt to enhance these experiences by displaying specific purchasing behavior (Hirschman, 1983). In other words, the more players have grown to love and care for their virtual lover – and, by extend, the fantasy they provide – the more they might be willing to invest money to enrich it. Consequently, it is derived that:

*H3: Players high in parasocial love are more likely to invest money in dating simulation games.*

Unlike traditional media characters such as actors or idols who individuals can encounter in other media formats or even in real life, the fictional nature of dating sim characters essentially binds them to their specific media contexts. Once the game has ended and the romantic parasocial relationship is no longer



enforced through regular interactions, the bonds players curated with their virtual partners eventually fizzle out (Branch et al., 2013). The loss of this relationship may result in distress not unlike real-life break-up experiences (Eyal and Cohen, 2006). Lonelier individuals have been prone to suffer from this dissolution, suggesting a more intense emotional dependence on parasocial relationships as a need satisfier (Eyal and Cohen, 2006). Modern dating simulation games increasingly offer in-game purchases to expand these virtual relationships through additional game content. In view of this, romantically lonely players may have a stronger urge to invest real money in-game to preserve the fantasy of the romantic relationship and continue receiving love and affection from their parasocial partner. This leads to our final hypothesis:

*H4: Players high in romantic loneliness are more likely to invest money in dating simulation games.*

Following the above-outlined theoretical considerations, we collected data to thoroughly examine the hypotheses and further the research objective of this paper. To do so, we adopted a cross-sectional study design which we will explain in the following.

### 3 METHODOLOGY

An online survey was chosen as a suitable approach for investigating the above derived research hypothesis. In doing so, this study focuses particularly on the female-oriented dating simulation game *Mystic Messenger* (MysMe). The measures leveraged for this study included a combination of established research scales as well as questions specifically created for the study. Ahead of distribution, the survey was tested through a series of face-to-face interviews which were conducted in May 2022. Where applicable, amendments were incorporated into the final questionnaire.

#### 3.1 Mystic Messenger

Launched in 2016, MysMe is a free-to-play dating simulation game that revolves around a female main character and seven romanceable love interests who are part of a mysterious charity organization called RFA. Roped into joining their charity as the new party planner, the player soon discovers that each RFA member has their tribulations and secrets to navigate through.

As a mixture of the slice-of-life and thriller genre, MysMe expertly exploits players' dependency on their phones, leveraging the interface and functions of well-known messenger apps to create a new and immersive dating sim experience that unfolds in real-

time across eleven weekdays (Ganzon, 2019). Unlike other games within the genre, MysMe almost entirely takes place in the game's in-game chatroom which opens every two to three hours and is used to interact and romance one of the available love interests. Missed interactions and additional story content can be bought using the in-game currency hourglasses.

Due to this unique gameplay approach and the genuine character interactions, the game has received broad international acclaim since its release and has become one of the most successful titles within its niche. Downloadable for both Android and iOS, the game currently counts more than five million downloads in Google Play Store, ranging at a high 4.6 stars with more than 440000 reviews (Google Play, 2023). Albeit numbers on revenue remain unclear, the fact that its developer Cheritz donated more than 100000 \$ to charity organizations within a few months of its release speaks for MysMe's overall commercial success (Cowley, 2018). Given the above-mentioned explanations, MysMe is considered an appealing avenue to examine the interplay of unmet romantic needs, parasocial love and purchasing behavior.

#### 3.2 Measures

To investigate the research hypothesis and answer the research question, we first defined several measures, covering the gameplay of the chosen game context, pre-defined measurement scales for parasocial love and romantic loneliness as well as several demographic parameters.

*MysMe Gameplay Habits.* To capture MysMe specific gameplay behavior, five questions related to how players engaged with the game in the past. These questions asked about whether the game had been played previously, how long it had been played, if players engaged with it in the past six months, if they had repeated a romance more than once, and whether they had ever used the game's in-game currency hourglasses. Players' investment of real-game money was measured by asking if they had previously spent money on the game and, if so, how much money they had spent and their reasons for spending money.

*Parasocial Love.* Two established scales were used to measure the intensity of players' romantic feelings for their love interests. Firstly, participants were asked to rank eleven items of the parasocial love subscale of Multiple-Parasocial Relationships-Scale (MPSR) proposed by (Tukachinsky, 2010). Items reflected both physical attraction towards and emotional closeness with the chosen media character, including, for example, 'I find MysMe character very attractive physically' or 'MysMe character

would be the perfect romantic partner for me'. Secondly, the recently introduced Adolescent Romantic Parasocial Attachment Scale (ARPA) (Erickson and Dal Cin, 2018) was employed, expanding PSL subscale (Tukachinsky, 2010) by incorporating cognitive aspects (two items, e.g., "I want to know as much as I can about MysMe character."), more in-depth affective experiences (three items, e.g., "My relationship with MysMe character makes me feel happy.") as well as the element of romantic fantasy (three items, e.g., "I often daydream about MysMe character."). Respectively, one item of the cognitive and two items of the fantasy dimension were omitted as they did not fit the fictional nature of the MysMe characters (e.g., "I imagine that MysMe character will someday pick me out of a crowd and see me as special."). Both scales were ranked from 1 ("strongly disagree") to 7 ("strongly agree") with higher scores indicating higher intensity of PSL. To capture the full scope of romantic parasocial experiences, both MPSR-PSL and ARPA scale were combined<sup>3</sup>, with the combined scale achieving excellent reliability ( $\alpha = .94$ ).

*Romantic Loneliness.* To investigate whether players romantic loneliness motivated stronger feelings of parasocial love, respondents were asked to complete eleven items of the Romantic Loneliness subscale (DiTommaso and Spinner, 1993). The subscale was originally created as part of the Social and Emotional Loneliness Scale for Adults (SELSA). Examples of the romantic loneliness items included "I find myself wishing for someone with whom to share my life" and "I have someone who fulfills my emotional needs (reverse coded)" among others. Rankings for each item spanned from 1 ("strongly disagree") to 7 ("strongly agree") with higher scores hinting at stronger feelings of romantic loneliness. Consistent with previous studies (Hu et al., 2021; Wang et al., 2008), the subscale yielded reliability at a very good level ( $\alpha = .85$ ;  $M = 3.95$ ;  $SD = 1.33$ ).

*Player Demographics.* Lastly, participants were asked a series of personal questions, covering standard information like their age, ethnical identity, current occupation and average yearly income. As it could not be ruled out that MysMe attracted non-

female players as well, a question about gender identity was added. To allow conclusions about players' romantic loneliness, participants were requested to disclose whether or not they were currently in a romantic relationship with anyone.

### 3.3 Sample & Procedure

Participants were recruited from MysMe specific online communities on Reddit, Amino App and Facebook via sharing of the survey link. Permission was granted by the moderators of the respective forum prior to posting the invitation. Alongside emphasizing the anonymity of the survey, volunteers were given the option to win a play store gift card to increase the participation rate. Over a two-week survey period in August 2022, a total of 855 participants completed the survey. However, several participants were omitted from the sample due their lack of fit to the research criteria. This included respondents who had never played MysMe, admitted to not having played the game the past 6 months, players under 18 and players who did not identify as female, leaving a final sample of  $N = 402$  female players.

Most players were between 18 and 30 years (85%) with a few players aged 41 and above (1.2%). With regards to ethnicity, most players identified as Caucasian (66.4%), Asian (14.9%) or Hispanic (10.2%). Most respondents had a full-time job (39%), studied (35.1%) or were currently looking for employment (17.2%). A majority earned between 35 000 and 75 000 \$ (41.5%) annually or ranged below 15000 \$ (28.4%). More than half of the players declared to be currently married or in a committed romantic relationship (62.4%). In terms of gameplay behavior, players indicated to have played MysMe for a little more than two years on average ( $M = 2.002$ ;  $SD = 1.5803$ ). Most of the players had engaged with any of MysMe's characters between one and six times (81.6%). Despite MysMe being a F2P title, 70% of the participants revealed to have spent money on the game. Total investments ranged between 5 and 99.99 \$ (48%) for most, while 12% of respondents expended more than 100 \$ on the game. Reasons for investing money mainly included unlocking new routes (62%) or access to additional content (62.8%).

## 4 RESULTS

Hypothesis 1 suggested that players high in romantic loneliness would also exhibit stronger romantic feelings for their dating sim love interest. To exam-

<sup>3</sup>A Spearman correlation was performed between the individual subscales to eliminate potential redundancies. Correlation confirmed positive relationships between all subscales ( $p < .001$  for all), however the strong correlation between the ARPA fantasy and PSL Emotional subscale ( $r = 0.807$ ;  $p < .001$ ) pointed to the possibility of essentially measuring the same constructs (Field, 2024). Accordingly, the three items included in the ARPA fantasy scale were dropped after an additional review of scale contents, seeing as they closely resembled items within the PSL Emotional subscale.

ine this relationship, a Pearson correlation<sup>4</sup> was conducted after calculating the mean scores for both romantic loneliness and parasocial love. Against expectations, a non-significant relationship between both variables emerged ( $r = -.048, p = .336$ ) suggesting that players' romantic loneliness does not play a role in developing romantic feelings for their virtual love interests. As a result, hypothesis 1 is rejected. This effect, however, might have been driven by the rather large share of dating participants within the sample as studies (Adam and Sizemore, 2013; Liebers, 2022) have shown that dating status, individually, has effects on both the extent of romantic loneliness and romantic feelings for media characters. Therefore, it was asserted that non-dating players would experience stronger romantic attachments to their love interests to satisfy latent unfulfilled romantic needs (H2). Two independent sample t-tests<sup>5</sup> were run to first examine if potential differences existed between dating and non-dating players. As anticipated, the comparison of romantic loneliness revealed a significantly stronger yearning for love among non-dating ( $M = 5.23; SD = 0.94$ ) than dating players ( $M = 3.18; SD = .84$ ), with differences between both groups appraised as very high ( $t(287.82) = 21.92, p < .001, d = 2.32$ ). Feelings of parasocial love for a love interest, in comparison, were not significantly different between non-dating ( $M = 5.21; SD = 1.10$ ) and dating participants ( $M = 5.23; SD = 1.16; t(400) = -.252, p = .80, d = -.03$ ). Albeit surprising, this points at the possibility that romantic loneliness, regardless of relationship status, does not play a role when it comes to romantic feelings for dating sim characters. To account for potential moderation effects of dating status, a moderation analysis was performed using the PROCESS macro by (Hayes, 2022) with parasocial love as the outcome variable, romantic loneliness as predictor and dating status as the moderating variable. Both predictor and moderator were mean centered. The analysis applied bootstrapping with 5000 samples and heteroscedasticity consistent standard errors (HC3; (Davidson,

1993) to determine confidence intervals. The overall model was weakly significant ( $F(3, 398) = 2.25, p = .082, R^2 = .0151$ ). However, the moderation analysis did not provide significant evidence that dating status moderated the effect between romantic loneliness and parasocial love ( $\Delta R^2 = .0006, F(1, 398) = 0.27, p = .60, 95\% CI [-.3188, .1724]$ ). To conclude, hypothesis 2 has to be rejected.

Alongside romantic loneliness as a motivator for parasocial love with virtual characters, another focus of this study is on how either feeling affected the willingness to invest real money within a F2P title. Given this interest, two independent point-biserial correlation analyses<sup>6</sup> were performed. To measure the willingness to purchase within the game, this variable was binary coded with 0 for "no money spent" and 1 for "money spent". Hypothesis 3 suggested that players high in parasocial love would be more willing to invest money to further enhance the relationship with their love interest. However, the first point-biserial correlation found no relationship between both variables ( $r(400) = .064; p = .202$ ). Consequently, players' feelings for their love interest had no impact on the willingness to spend money within MysMe, suggesting other underlying purchase motivations not explored within this study. Thus, hypothesis 3 cannot be supported.

The last hypothesis assumed that players high in romantic loneliness would be more willing to invest money to keep the fantasy of the relationship alive and protect themselves against potential break-up experiences (H4). Unlike assumed, the correlation analysis revealed a weak but significant negative relationship ( $r(400) = -.133; p = .007$ ), suggesting that less romantically lonely individuals are more willing to invest money within the game. Therefore, hypothesis 4 is refuted.

Despite neither of parasocial love nor romantic loneliness being related to the willingness to invest money, this study also looked at how either feeling influenced the actual spending patterns of players. For this, paying players were first divided into four different spending groups: low spenders (less than 5 \$), low-to-mid spenders (5 to 49.99 \$), mid-to-high spenders (50 to 149.99 \$) and high spenders (150 \$ and above). Next, two independent Welch-ANOVA<sup>7</sup> were performed to account for differences. The anal-

<sup>4</sup>Pearson correlation was chosen as neither linearity nor normalcy of distribution could not be assumed after examining the variables via scatterplot and the Shapiro-Wilk test ( $p < 0.001$ ) for both romantic loneliness and parasocial love.

<sup>5</sup>Studies have found the t-test to be rather sturdy in terms of non-normal distribution in cases where samples sizes were higher than  $n = 30$  (Bortz and Schuster, 2010). Considering the sample sizes of both contrasted groups (dating :  $n = 251$ ; non - dating :  $n = 151$ ), this requirement was neglected. Outliers, too, were checked in advance using a box plot. Ultimately, however, they were kept within the sample as they were considered rather weak.

<sup>6</sup>Although different ways to do a correlation between metric and numeric variables are possible, point-biserial correlation was chosen due to its easier interpretability.

<sup>7</sup>Because Levene's test could not assume equal variances for either variable (parasocial love:  $p = .038$ , romantic loneliness:  $p = .002$ ), the Welch-ANOVA was applied for both analyses.

Table 1: Summary of Hypothesis Testing.

Hypothesis	Statement	Results	
H1	Players high in romantic loneliness exhibit stronger parasocial love for dating sim love interests.	$r = -.048$ $p = .336$	Rejected
H2	There is a difference in the relationship between romantic loneliness and parasocial love for dating and non-dating players.	$F(1, 398) = 0.27$ $p = .60$	Rejected
H3	Players high in parasocial love are more likely to invest money in dating simulation games.	$r(400) = .064$ $p = .202$	Rejected
H4	Players high in romantic loneliness are more likely to invest money in dating simulation games.	$r(400) = -.133$ $p = .007$	Rejected

ysis identified significant differences when looking at feelings of parasocial love and individual spending patterns ( $F(3, 107.11) = 5.74, p < .001$ ). More precisely, low-to-mid spenders ( $-.712; CI[-1.18, -.24]$ ) and mid-to-high spenders ( $-.59; CI[-1.08, -.09]$ ) showed significantly less parasocial love compared to high spenders. In a similar vein, the corresponding Welch-ANOVA also revealed significant differences between levels of romantic loneliness and spending patterns ( $F(3, 100.53) = 2.83, p = .042$ ). Specifically, low spenders scored significantly lower on romantic loneliness than mid-to-high spenders ( $-0.62; CI[-1.19, -.06]$ ) as depicted by Figure 1.

## 5 DISCUSSION

This paper focused on the potential influence of romantic loneliness on the intensity of romantic feelings for the fictional protagonists of the free-to-play game MysMe – one of the first to address romantic parasocial phenomena in the context of such dating simulation games. While it was assumed that the romantic nature of dating sims would make parasocial love for these characters particularly appealing for romantically lonely players, findings suggest that the opposite is true. Less romantically lonely players exhibit stronger feelings for their love interests. This is consistent with a study done by (Hu et al., 2021) who found a similar relationship when inquiring about parasocial love with mass media characters. It appears, then, that romantic parasocial compensation is no more likely to occur in interactive media environments than in traditional ones. It might just be that, despite the simulated reciprocity offered in these games, most players remain aware that these relationships are not real (Karhulahti and Välisalo, 2020). Therefore, such attachments might not be deemed adequate to fulfill romantic desires. As a result, romantically lonely players may look for other, real-life alternatives instead. Indeed, according to Social Presence Theory (Short et al., 1976) people are more inclined to turn to interpersonal bonds for their

relational needs rather than using mediated communication to satisfy them. The same may be true for romantic needs. For less romantically lonely players, on the other hand, the appeal of such romantic attachments might simply lie in their design. (Mallon and Lynch, 2014) contend that it is natural for players to develop meaningful emotional attachments to non-playable game characters if these figures are well-rounded, responsive, and able to change depending on players' choices. Other factors such as physical and personal attraction, as well, have been found as reasons to develop romantic feelings to game characters (Coulson et al., 2012). In dating simulation games, these factors greatly contribute to their success. Moreover, with their romantic needs fulfilled, such players may be generally more open to pursuing these intimate attachments for what they are – an easy and risk-free way to enjoy and indulge in different romantic scenarios with a set of attractive characters. All in all, the results further underpin the notion that romantic parasocial bonds as complementary relationships (Karhulahti and Välisalo, 2020; Wang et al., 2008).

While we assumed that dating status would influence the relationship between romantic loneliness and parasocial love, this assumption was not supported. Instead, no significant differences were observed between dating and non-dating players. This finding is intriguing as it contradicts research by (Greenwood and Long, 2011) and (Liebers, 2022) who found singles to be generally more receptive to more intense parasocial bonds. While surprising at first glance, the little difference in the intensity of feelings between both groups can be ascribed to the fact that parasocial bonds are a natural part of the media experience. After all, the virtual relationship between the players and love interests develops gradually the more they get to know each of them and their quirks. Moreover, they offer (young) women a way to explore their romantic relationships with little consequences or dangers in real-life relationships. This is particularly important as women tend to be more at risks when it comes to exploring their sexual and romantic identity, es-



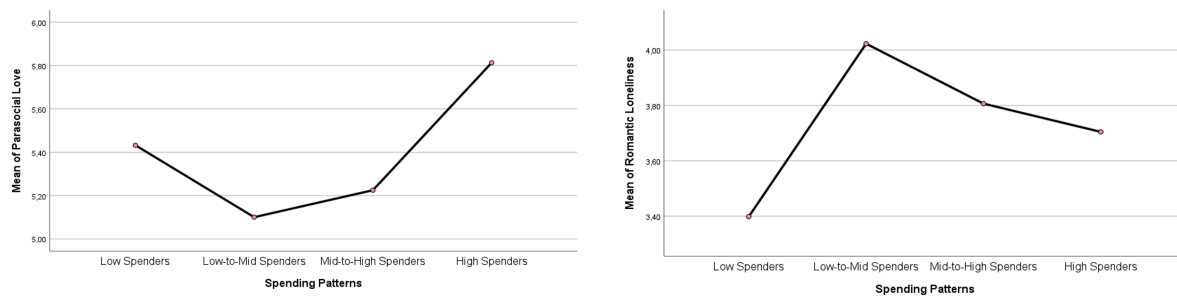


Figure 1: Mean differences of parasocial love and romantic loneliness by spending patterns.

pecially in early adolescence (Erickson and Dal Cin, 2018). Therefore, the relationships fostered in dating simulation games might be especially appealing as they give players a sense of control over their development that might be empowering and fulfilling. Moreover, whereas single players might indeed derive certain benefits from their romantic parasocial attachments in the absence of a romantic partner (Adam and Sizemore, 2013), dating participants may use these relationships to spice up their day-to-day love life. As explained above, dating simulation games often offer a diverse cast of love interests, each with their distinct personality. By engaging with them, players get to experiment with different characters who not necessarily have to be the kind of person they are committed to in real-life (Beusman, 2016; Schwartz, 2018). Moreover, compared to their real-life partners, these love interests typically lavish players with their undivided attention as they do not need to concern themselves with responsibilities common in daily life.

In terms of investing money in MysMe, players' romantic feelings for a love interest did not relate to their decision to spend money in-game as the relationship was not significant. Given the large number of reported paying players (69.2%), this might suggest that players invested for reasons driven more by overall gameplay than the attachments themselves. However, when viewing the actual amount of money paying players had invested, a slightly different picture emerged. Both low spenders ( $\leq 5$  \$) and high spenders ( $\geq 150$  \$) showed significantly higher levels of parasocial love, indicating at least some sort of interdependence. In comparison, low-to-mid (5 to 49.99 \$) and mid-to-high (50 to 149.99 \$) spenders exhibited overall fewer romantic feelings for their love interest, though, that did not seem to hinder them from spending money in the game.

There are several explanations for this. On the one hand, some players might not view purchasing virtual goods in the game as a valuable way to enhance their virtual relationship despite their intensity of feelings. While it is true that some content can only

be bought by investing real money, other content can be unlocked by extending some effort towards collecting the in-game currency during gameplay. Compared to other games with similar business models, MysMe allows players to do so relatively easy by participating in the daily chatrooms. As such, players high in parasocial love might not be required to spend a lot of money to achieve the desired outcome. On the other hand, other players with strong feelings of parasocial love might invest exceedingly more money to get the full experience of the simulated relationship at a more rapid pace. Impatience might play a role in this respect. The desire to progress fast might be enough of a motivator to disregard the amounts of money invested because the gratifications achieved momentarily make up for it. This might be especially true for single-player games like MysMe where there is no competition and thus no feelings of guilt or unfairness when taking such shortcuts (Evans, 2016).

The overall level of romantic loneliness did relate to spending money in MysMe, albeit in an unexpected way. Rather than greater romantic loneliness, it was less romantically lonely players who were more likely to spend money within the game. Considering the time and effort needed to complete routes or unlock content in MysMe, and the fact that many players were in a committed relationship, speeding up gameplay or using money for convenience might be the logical conclusion. Indeed, the excessive use of mobile devices while in the presence of a romantic partner can significantly impair and damage existing relationships (Zhan et al., 2022). To avoid ignoring the real-life partner without hampering the enjoyment of the game might have less lonely players more willing to invest real money in dating sims.

Additionally, more ambiguous findings emerged for romantic loneliness when looking more closely at the amount of money invested. Those indicating the most romantic loneliness tended to have spent considerably more money compared to players with lower scores who only spent moderate sums of money (less than 5 \$). This insinuates that unfulfilled romantic

needs and the fear of losing the virtual relationship do play their part in terms of purchasing decisions. Albeit this might only be true for a selective group of paying players. For these players, the absence of a (fulfilling) romantic partner might trigger more intense purchase behavior to sustain the gratifications from the virtual relationship and avoid any unpleasant repercussions upon its dissolution (Eyal and Cohen, 2006). Thereby, the emotional response to an expected loss might be so intense that simply replaying the game as usual without getting any additional interactions out of it may no longer be sufficient.

## 6 CONCLUSION AND OUTLOOK

Amidst rising concerns about whether female players flock to dating simulation games to compensate for missing real-life romance, the present study explores the role of romantic loneliness and dating status in developing romantic parasocial attachments. Moreover, it is one of the first to address how these feelings interact with the decision to invest real money into these virtual relationships. For this purpose, an online survey among 402 female players of the viral mobile dating sim MysMe was conducted and evaluated. On the question of which role the longing for romantic intimacy played in fostering romantic feelings for these virtual characters, the general answer is none. Players do not use these bonds to compensate for any void in their love lives, joining findings of related studies on parasocial compensation among mass media figures. While players, indeed, develop strong emotionally meaningful attachments to their chosen virtual lovers, unfulfilled romantic needs are not the central motivator around doing so. Neither romantically lonely nor non-dating players show more intense feelings for these characters. Rather interestingly, there is little to no difference in the overall intensity of parasocial love between these groups, highlighting the need for more qualitative research in this field. In-depth interviews with dating and non-dating players of dating simulation games may provide more detailed insights into what prompted them to indulge in these simulated relationships to begin with. Furthermore, exploring the impact of playing such games while in a committed relationship might also be a fruitful new avenue of research. Matters such as viewing such relationships as cheating or feelings of jealousy of the non-playing partner would certainly be interesting to explore.

Despite the strong feelings many players exhibited for the virtual characters in MysMe, these emotional attachments have little impact on the willingness to

invest real money in the game. Though some more heavily involved players show more intense spending behavior, the overall spending patterns are conflicting and do not allow for a conclusive interpretation. Similar findings are observed for romantic loneliness. While overall willingness to expend money is more prominent for less romantically lonely people, for paying players, more intense feelings of loneliness do prompt more excessive spending behavior overall. Apparently, investing in the game offers additional benefits to some players. As this study takes an exploratory approach and no prior study has inquired about the hypothesized relationships, further research is certainly needed before drawing any inferences. Future studies might expand variables on purchase behavior, asking what had prompted players to initially invest in the game to gain a more thorough understanding of paying motivations in this specific niche. Tracing potential direct or indirect relations to motifs recognized in studies on other free-to-play environments, as well, may further provide valuable insights into spending behavior.

Ultimately, this study points at the complexities in the development of these one-sided romances while also offering insights into the dating sim niche and its players as a whole – with promising new areas of research in the future. By understanding the allure of this simulated romantic intimacy, scholars can gain an idea of how people's emotions intertwine with interactive media characters and how this shapes their experiences and behaviors. Specifically, when it comes to investing money. As dating simulation games continue to evolve, this might become increasingly important.

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