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Player-Avatar Bonds and Gaming Benefits and Risks: Assessing Self-Discrepancy Theory Against a Broader Range of Character and Play Experiences

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Abstract

How players relate to their avatars in digital and analog gaming predicts both positive and negative gaming experiences. For example, a perceived discrepancy between one's actual and avatar self is associated with both gaming benefits and risks. However, such self-discrepancy approaches treat avatars narrowly as self-substitutes that allow players to project idealized identities in a virtual environment. Yet, those approaches have not examined how other kinds of player-avatar bonds—such as avatars experienced as distinct other persons or as impersonal objects used to accomplish gaming goals—might differentially predict gaming benefits and risk of harm. Nor has self-discrepancy research explored how avatar experiences might function in forms of play with positive and negative aspects, e.g., in situations where challenge, suffering, and repeated failure are preconditions for eventual feelings of accomplishment. In the current study, we use ethnographically informed survey responses from North American gamers (N = 149) to examine how a range of player-avatar relationships shape diverse gaming experiences. We find that relating to avatars as self-substitutes, including in situations where players' experience discrepancies between their actual and avatar selves, does predict gaming benefits and risks, but so do other kinds of player-avatar bonds. Our research thus confirms the importance of self-discrepancy theory in assessments of gaming experience but nonetheless suggests the need for caution if claiming distinctive benefits or risks associated with particular kinds of player-avatar bonds.

Keywords: self-discrepancy theory; gaming; roleplaying games; avatars; gaming disorder; identity

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Introduction

A Cultural Approach to Gaming Benefits and Risks

Virtual environments such as video games now form important components of everyday life for many people, as do preoccupations regarding their impact on individual well-being. In this sense, the World Health Organization (ICD-11) recognized Gaming Disorder (GD) as an addictive behavior characterized by an uncontrolled pattern of play generating functional impairment (World Health Organization, 2019). From that global health perspective, GD is defined as persistent or recurrent gaming behavior despite the occurrence of negative consequences and functional impairment of different areas of the individual's life (i.e., personal, familial, social, educational, or occupational), and which lasts for a prolonged period (typically 12 months).

While now decades of cumulative study suggest that a minority of individuals experience GD (1–3% of the worldwide gaming population according to a recent meta-analysis; Stevens et al., 2021), it is also recognized that for most individuals gaming can produce psychological benefits related to how games can provide players with feelings of accomplishment, belonging, and stress relief (Kowal et al., 2021; Snodgrass, Dengah, et al., 2019). Furthermore, it has been shown that the time spent gaming is not necessarily related to negative outcomes (Ballou et al., 2025; Király et al., 2017), as it can be the more intensive and passionate forms of gaming that help players successfully reduce loneliness and enrich their lives (Giardina, Fournier, et al., 2024; Snodgrass et al., 2018).

While gaming benefits and risks have been widely explored separately, less is known about how they may coexist within players' experiences, as when players tolerate a certain degree of failure, frustration, and even social conflict if there is a likelihood of future rewards and payoffs (Juul, 2013; Snodgrass et al., 2016, 2020). With this gap in mind, Snodgrass, Dengah, et al. (2017) identified and validated via a combination of interviews, ethnographic observations, and field surveys on gamers from North America and other parts of the world, 21 commonly experienced benefits and 21 negative consequences of gaming intensively. The initial interviews asked players to speak about the positive and negative consequences of their intensive video game play from their own point of view, using an adaptation of a widely used cultural psychiatric interview protocol (Groleau et al., 2006). Those interviews were systematically coded and in combination with analysis of ethnographic fieldnotes produced a list of positive and negative consequences that are salient from the point of view of gamers themselves, which were placed in a survey and tested via cultural consensus analysis (CCA; Romney et al., 1986; Weller, 2007) to assess the extent that respondents assessed the items from a shared (and presumably socially learned) underlying frame of reference. Qualitatively, the positive and negative experience items revealed different thematic areas related to, for example, players' social and achievement experiences. Thus, for the social area, a potential benefit from a player perspective was that "connecting to diverse people via gaming expands my social circle and perspective on life," while a respective negative consequence was gaming to such an extent "that I find myself isolated and lonely." For the achievement area, a potential benefit was finding "satisfaction in sticking with a gaming goal until it is completed, even though this might entail a lot of hard work," while a corresponding negative consequence was to "experience gaming more like a draining job than something I love." Despite the different qualitative themes (or thematic dimensions) that were uncovered, the formal CCA nonetheless revealed that respondents assessed the combined items according to a unified underlying frame of reference, sometimes referred to by anthropologists as a cultural model (Bennardo & De Munck, 2014), in this case related to norms and standards through which gamers interpreted individual items as being part of overall positive or negative kinds of gaming behaviors and experiences (Snodgrass, Dengah, et al., 2017)[1].

One strength of this cultural approach is how it highlights experiences important to gamers themselves, with survey items stated in ways (within gamer-specific "idioms") that are more likely to be recognized and appreciated by study respondents (Snodgrass, Dengah, et al., 2019). Of note, this instrument's negative gaming experiences items, although arising from the player perspective, nevertheless include those that would be found in GD scales—e.g., cognitive preoccupation, withdrawal, loss of pleasure in gaming, compromised social relations, loss of control (Aarseth et al., 2016; Király et al., 2023; Petry et al., 2014)—while nonetheless capturing broader forms of gaming-related dysfunction and distress that players viewed as important (for more on this point, see Snodgrass, Zhao, et al., 2019). As such, we refer in the current work to that ethnographically developed cluster of negative gaming experiences, which we use in the present study, as representing a form of "problem" or "problematic" gaming to distinguish it from clinical measures of GD (Green et al., 2020). Another strength of this consideration of positive and negative gaming consequences alongside each other is that it allows researchers to better attend to the richness of player experience and thus to potentially avoid misidentifying certain negative behaviors and

experiences as manifestations of GD if, for example, they are also connected to corresponding positive and rewarding ones in a player's life. Likewise, as in the current study, researchers can better understand the role a predictor like player-avatar bond might have in healthy (or unhealthy) patterns of gaming if they consider how such a factor simultaneously predicts positive and negative play outcomes rather than only one of those outcomes considered in isolation from the other (for more on these points, see Snodgrass, Dengah, et al., 2017; see Appendix for these positive and negative gaming experience items).

Player-Avatar Bonds and Gaming Outcomes: Extending Self-Discrepancy Theory Perspectives

Research highlights that the bonds players establish with their avatars can impact the intensity and quality of gaming experiences (Dengah & Snodgrass, 2020; Loewen et al., 2021). Avatars serve as representations of players within a game, functioning as a virtual presence that others can see and interact with. Depending on the game genre, players can customize their avatars' appearances and assign them various roles and identities that align with the game's setting or objectives (Giardina, Schimmenti, et al., 2024). The most explored kind of player-avatar bond so far is based on the idea of avatars as an extension of the player's person or Self into the game-world (Infanti et al., 2024). In this perspective, players would project into their avatars a mixture of aspects of their Self that they feel they currently possess and others that are felt to be desired though not yet possessed. The distance between perceived actual as compared to desired (or idealized) aspects of the Self has been defined as a form of self-discrepancy. In these terms, self-discrepancy theory (hereafter SDT; Higgins, 1987, 1989) identified three separate aspects of the Self: the actual self (traits one actually possesses), the ideal self (traits one would ideally like to possess), and the ought self (the traits someone believes one should or ought to possess; Higgins, 1987, 1989). Early SDT work showed that discrepancies between individuals' perceptions of actual selves, on the one hand, and ideal or ought selves, on the other, were associated with anxiety and depression states (e.g., see Barnett et al., 2017; Higgins et al., 1985; Mason et al., 2019; Schlechter et al., 2022; Scott & O'Hara, 1993).

Informed by self-discrepancy theory (Higgins, 1987), research about the player-avatar bond has added the avatar self (characteristics of the user's online personae), with a review suggesting that the avatar self is typically "better than the user, resembling the ideal self more closely than the actual self" (Sibilla & Mancini, 2018, p. 12). Studies in this area have shown that the greater the distance between a player's perception of their actual self and the characteristics of the avatar, the greater the risks associated with gaming (Bessière et al., 2007; Brown, Blinka, et al., 2024; Li et al., 2021; Sibilla & Mancini, 2018; Stavropoulos et al., 2023). Such outcomes are explained to result primarily from individuals with low self-esteem and poor self-concept who may establish a compensatory identification with avatars that are characterized by craved or idealized traits (Green et al., 2021a; Lemenager et al., 2020). While such identification would allow players to experience those traits vicariously through their avatars and thus potentially buffer negative emotions associated with identity threats, a potential benefit, such identification could also heighten—when the discrepancy is too pronounced—the perception that those traits are absent in the player's actual identity outside the game (Dengah & Snodgrass, 2020; Kardefelt-Winther, 2014; Müller & Bonnaire, 2021; Snodgrass et al., 2018). In the long run, discrepancies of these kinds between perceived actual- and avatar-selves seem to increase the risk of virtual worlds participation—especially when playing to escape the actual world—in ways that compromise life functioning and thus produce negative consequences (Giardina, Fournier, et al., 2024; Giardina, Schimmenti, et al., 2024; Green et al., 2021b; Snodgrass et al., 2011).

The study of the relationship between player-avatar bonds and health outcomes based on SDT, in which the avatar is conceptualized as an in-game extension and a potential enhancement of the player's identity, has contributed significantly to the understanding of problem gaming thus far. Nevertheless, other ways of relating to the avatar, which may influence benefits and negative consequences of gaming, have been overlooked. Work by Banks and Bowman (Banks, 2015; Banks & Bowman, 2016, 2021) offers a useful and complementary perspective here. They proposed that players can establish four types of relationships with their avatars: as me, as symbiote, as other or as an object. The perception of the avatar as me or symbiote serves as a point of conjunction with SDT. Indeed, the me avatar is conceptualized as a direct extension of the player's Self into the game, i.e., player and avatar selves are merged based on the actual self of the former—a me, where there is no demonstrable discrepancy between a player's Self and the avatar. For example, in tabletop roleplaying games like Dungeons & Dragons (D&D), some players simply "insert" themselves into a game via their characters (Bowman & Schrier, 2018; Montola & Holopainen, 2012), making the avatar simply themselves—a "me"—rather than an improved or altered self (Banks, 2015; Mancini et al., 2024).

The symbiote avatar is conceptualized as blending some aspects of the player's actual self with further traits drawn from a "unique and authentic social other" (Banks & Bowman, 2021, p. 3). This dialogic dynamic provides players with the possibility or integrating other (heroic or monstrous) traits into the actual self, thus corresponding in SDT terms with situations where there are discrepancies between a player's actual and—potentially idealized—virtual selves. In this scenario, the literature often highlights the "improved" or "enhanced" nature of the virtual/idealized self with respect to a player's actual person. However, of note, roleplaying gamers often enact anti-heroic selves, where players perform non-normative or taboo behaviors without social repercussion (Deterding, 2018; Sibilla & Mancini, 2018; Stenros & Bowman, 2018). In such situations, role-players can feel that they "bleed" into their characters and thus establish symbiotic relationships with them (Banks, 2015; Bowman, 2013b). Nonetheless, such antiheroic symbiote avatars—where a player's actual and virtual selves diverge and thus demonstrate discrepancies—can still be considered a desirable or idealized model (in the sense that players desire to be transgressive or anti-social), though such ideas have not yet been fully explored (though see Dengah & Snodgrass, 2020; Sibilla & Mancini, 2018).

Beyond the avatar experienced as a self-object, either as a me or a symbiote, another common mode of orientation involves the avatar experienced as a distinct and social other person, oftentimes as a friend or companion (Banks, 2015; Banks & Bowman, 2016; Green et al., 2020). Although in this type of relationship the players do not extend themselves into the avatar, relating with the latter as a social and differentiated entity could provide for different forms of personal and emotional attachment, less about personal identity and more about players' extant social relationships and even their experiences of loneliness and social isolation (Bozoglan et al., 2013; Schiano et al., 2014; Snodgrass et al., 2018).

Each of these three types of player-avatar bonds—as me, symbiote, or other person—entail players forming personal bonds with their avatars, with the avatar either being an extension of the player's own person (me or symbiote) or as a distinct other person. Further, such personal bonds with an avatar can entail emotional attachment and intimacy, in the sense of "deep affective attachment manifesting in language of care and senses of shared experience" (Banks & Bowman, 2016, p. 216). Nonetheless, some players do not relate to their avatars in personal or emotional terms at all, instead experiencing them as asocial tools or objects to accomplish gaming goals (Mancini et al., 2019, 2024; Sibilla & Mancini, 2018), with this relational mode being especially common in first-person shooter games like Counterstrike-Global Offensive and in multiplayer battle arena games like League of Legends (Snodgrass et al., 2021; Taylor, 2012). Such impersonal relations can even occur in online roleplaying games like World of Warcraft, particularly when players collaborate together to defeat challenging "end-game" computer-generated opponents termed bosses, or in player-vs-player (PvP) contests pitting gamers against each other (Golub, 2010; Snodgrass, 2023; Snodgrass et al., 2016).

We use Banks and Bowman's framework to extend SDT theory by examining how a broader range of player-avatar bonds might be connected to gaming benefits and risks. For example, it may be the case that having a personal bond with an avatar—as a me, symbiote, or other person—might entail a greater degree of risk (or benefit) compared to establishing impersonal bonds with virtual selves; however, such ideas have yet to be tested.

The Present Study: Using Self-Discrepancy Theory to Explain a Broader Range of Character and Play Experiences

To date, SDT research has explored how players experiencing their avatars as extensions of themselves (i.e., me or symbiote) can impact positive and negative gaming consequences, though the way that other kinds of player-avatar bonds (like avatars experienced as other persons or as impersonal objects or tools) shape gaming outcomes have been largely ignored. This is even though a growing body of research suggests that establishing a range of different kinds of personal relationships with an avatar (as me, symbiote, and also other person) could offer additional positive psychic rewards than the more neutral experience of an avatar or a character as simply an object or tool used to accomplish gaming goals. Thus, for example, playing an avatar that represents in some sense a player's actual Self—like a me, where there is no demonstrable discrepancy between a player's actual and virtual self—can be associated with deeply rewarding feelings of embodiment and self-presence (Bowman & Schrier, 2018; DeVeaux et al., 2023; Jin, 2012; Montola & Holopainen, 2012; Ratan, 2013; Snodgrass et al., 2011, 2012). Further, based on research by Slater et al. (2014), enhanced feelings of immersion in a narrative can allow individuals to temporarily adopt new perspectives and experiences that challenge or destabilize priorly held views, with implications for how storied game-worlds might work therapeutically. In doing so, individuals can safely process "self-threats" indirectly, allowing them to reconcile the impact of such situations or dilemmas (Slater et al., 2014), a clear potential benefit from playing an avatar as a me and thus direct extension of the Self. Likewise,

relating symbiotically to an avatar—where players incorporate into their actual selves desired and even idealized traits taken from others—provides opportunities to experience new transformed identities, be those heroic, monstrous, or something else, providing for satisfying temporary escape from everyday life (Banks, 2015; Banks & Bowman, 2016; Bowman & Schrier, 2018; Dengah & Snodgrass, 2020; Sibilla & Mancini, 2018). Further, experiencing avatars as other persons such as friends or companions can compensate for perceived personal and interpersonal shortcomings related to social isolation and loneliness (e.g., Schiano et al., 2014; Snodgrass et al., 2018).

Despite the potential benefits from relating to an avatar in more personal terms, players also run risks as well. For example, feeling that one's character is in fact oneself—a me—could potentially magnify the hurt from virtual social conflicts (Bowman, 2013b; Bozoglan et al., 2013; Snodgrass et al., 2012, 2018; Stenros & Bowman, 2018). Further, now extensive SDT gaming research demonstrates how identifying with an avatar as an improved or even idealized version of the Self—which is one kind of symbiotic way of relating to an avatar or character—has been shown to be consistently associated with gaming-related risks (Bessière et al., 2007; Li et al., 2021; Mancini et al., 2019, 2024; Sibilla & Mancini, 2018; Stavropoulos et al., 2023; Szolin et al., 2022). The explanation here is that players who extend themselves into a virtual environment via their avatars, potentially in attempts to compensate for perceived personal shortcomings, are at greater risk of over-investing in these virtual forms of virtual identity (Dengah & Snodgrass, 2020; Giardina, Schimmenti, et al., 2024; Green et al., 2020; Kardefelt-Winther, 2014; Király et al., 2023; Stavropoulos et al., 2023; Szolin et al., 2022).

As these examples show, specific ways of relating to an avatar, such as in more personal terms, can simultaneously magnify both gaming benefits and risks. This suggests that positive and negative gaming outcomes can exist in relation to each other and thus should be evaluated together. For example, the deeply rewarding nature of gaming often involves investing personally in challenges that entail, at least initially, sustained frustration and emotional distress (Juul, 2013; Snodgrass et al., 2011, 2012, 2020). Indeed, emotional distress can arise in tabletop roleplaying games like D&D, with challenges that involve social conflict and problem solving and even violence and sometimes player characters' deaths (Bowman & Schrier, 2018). In overcoming fantastical threats and challenges in the game, some players come to experience vicarious control and efficacy in their lives, which might even have positive spillover effects into their actual-world lives (Causo & Quinlan, 2021; Henrich & Worthington, 2023). Nonetheless, little research has explored gaming engagement in terms of players' simultaneous experience of positive and negative consequences. Of particular interest here, while the SDT literature has suggested that a personal attachment to an avatar as compensatory virtual identity can be beneficial or detrimental to the player depending on the degree of discrepancy between actual and avatar Selves, the benefits have been significantly less explored than the negative consequences.

In the current study, we aim to expand the SDT approach to avatars with a broader framework, based on work by Bowman and Banks and others, and to examine the links between those expanded ways of relating to avatars and gaming benefits and negative consequences as identified by Snodgrass, Dengah, et al. (2017). More specifically, we aim to clarify when and whether relating to an avatar in a personal way (i.e., me, symbiote, or other person bonds) might differentially predict gaming-related benefits and harm compared to treating avatars like impersonal objects or tools (Banks, 2015; Banks & Bowman, 2016). A growing body of research suggests relationships between more personal player-avatar bonds and gaming outcomes; however, no study has yet to systematically and directly compare the different kinds of bonds—here, me, symbiote, other person, object—in relation to both positive and negative gaming consequences. In doing so, we aim to more fully account for how player-avatar bonds influence gaming experiences as compared to typical SDT analyses. Beyond scholarly relevance, clarifying exactly which player-avatar bonds are linked to gaming-related harm could inform clinical practice, as some posit that more personal ties to an avatar might indicate a higher risk of problem gaming (Infanti et al., 2024; Stavropoulos et al., 2023). Further, our research has implications for how therapeutic "games for good" might be designed, as those interventions can involve strategic attention to and manipulation of player-avatar relationships (Arenas et al., 2022).

Research Questions and Hypotheses

More formally, we state the rationale described above in the following research question:

RQ1: Do players who relate to avatars in more personal compared to impersonal ways experience different benefits and negative consequences from their gaming?

And we hypothesize in relation to this research question:

H1: Players relating to their avatars as a me (**H1a**), symbiote (**H1b**), or other person (**H1c**; all personalized relationships) will experience greater gaming benefits compared to players who relate to their avatars either as impersonal objects or tools.

H2: Players relating to their avatars as a me (**H2a**) or a symbiote (**H2b**; and thus as self-substitutes of a kind) will experience greater risk for problem gaming compared to players who relate to their avatars either as distinctive others or as impersonal objects or tools.

As an additional hypothesis that helps us identify relationships between a specific dimension of player-avatar bonds and gaming outcomes, we posit:

H3: Players who report more avatar-related positive emotions will report more positive and less negative overall gaming consequences.

To recap ideas highlighted in the earlier literature review, the logic of **H1** is that more personal player-avatar bonds have been associated with a variety of gaming benefits, including deeper feelings of emotional connection, immersion, embodiment, self-presence, and companionship in ways that can help players establish more satisfying actual-world identities and relationships (Banks & Bowman, 2016; DeVeaux et al., 2023; Jin, 2012; Montola & Holopainen, 2012; Schiano et al., 2014; Sibilla & Mancini, 2018; Slater et al., 2014; Snodgrass et al., 2011). Nonetheless, we also posit H2, given how personally identifying with an avatar (me or symbiote), particularly when trying to compensate for perceived personal shortcomings, raises the risk of over-investing in virtual forms of virtual identity, thus increasing potential negative gaming consequences (Dengah & Snodgrass, 2020; Giardina, Schimmenti, et al., 2024; Green et al., 2020; Kardefelt-Winther, 2014; Király et al., 2023; Stavropoulos et al., 2023; Szolin et al., 2022). Of note, in **H2**, we do not posit that personally relating to avatars as other persons—like friends or companions—would magnify risks for experiencing negative gaming consequences, given how such forms of play seem to instead help relieve social isolation and loneliness (Schiano et al., 2014; Snodgrass et al., 2018). Finally, in **H3**, we aim to isolate how a particular dimension of player-avatar bonds—the emotional connection players can develop with their avatars—might positively impact player experience (Banks & Bowman, 2016). Other dimensions were possible—such as experiences of immersion, self-presence, or agency (Banks & Bowman, 2016; DeVeaux et al., 2023; Jin, 2012; Ratan, 2013; Slater et al., 2014)—but players' emotional bonds with their avatars seemed particularly important in our ongoing ethnography and understudied in relation to factors like immersion, to warrant scrutiny in the current study.

Finally, we formulate the following more exploratory research question:

RQ2: Does relating to avatar as a symbiote—where there is a discrepancy of some kind between a player's actual and virtual self, compared to other personalized ways of relating to an avatar (as me or other person)—provide for more benefits and negative consequences?

Given the potential benefits and harm associated with various personal ways of relating to an avatar, we are unable to predict with certainty whether symbiotic bonds with avatars as compared to other personal kinds of bonds—i.e., as me or other person—would be associated with greater gaming-related benefits or harm. Nonetheless, symbiotic player-avatar bonds involve situations of discrepancy between players' actual and virtual selves, i.e., the actual self is extended to include new traits, with idealized or monstrous selves representing two different kinds of symbiotes. As such, the symbiote category allows us to directly speak to SDT research and thus assess SDT expectations (symbiote as a proxy for transformed or idealized selves) against a broader range of player-avatar bonds (me, other person, object), which has yet to be undertaken in prior research.

Covariates

Our analysis includes a selection of potentially confounding variables that might bias estimates of the relationship between our key predictor (player-avatar bond) and outcomes (positive and negative gaming consequences). Thus, for example, we expected players of roleplaying games (RPGs) as compared to shooter games to invest more heavily in a gaming-avatar in personal terms—with particular focus on me and symbiotic identity bonds with characters—as opposed to a mere object on a screen, with further implications for overall gaming experiences (Bowman & Schrier, 2018). We also anticipated that higher gaming involvement (in terms of weekly gaming hours) might be associated with both stronger senses of personal connection to avatar-characters (as opposed to viewing them as solely objects) and potentially greater gaming pleasure and distress (Snodgrass et al., 2018). The degree

of social support players felt in relation to their gaming (and others' judgments) could make players more or less likely to experience and report a strong personal bond with gaming avatars as an alternative version of themselves (a symbiote), while impacting gaming-related pleasure and distress as well (Giardina, Schimmenti, et al., 2024). We included age because prior research suggested that older players might be less personally invested in avatar-selves and also be less likely to experience problem gaming (Kim et al., 2022). Our ongoing ethnographic research had revealed gender differences in players' emotional relationships with their gaming avatars and overall gaming-related pleasure and distress, which is consistent with an emerging literature on problem gaming (Dong & Potenza, 2022).

Methods

Overview

Our study's main analytical aim was to clarify the relationship between forms of player-avatar relationships (our key predictor) and gaming experiences (our study outcome). We began with a qualitative phase of study, which included interviews with RPG players of various kinds (N = 36) and weekly participant-observation over three months with a local group of live-action role-players (LARP). We focused initially on RPG players because we anticipated that they might be more likely to identify with their avatars as identity substitutes and specifically as symbiotes, a key focus of our study, with direct implications for SDT theory. From this, we developed and distributed a survey via network and snowball sampling to North American gamers (N = 149) playing various gaming genres, where we asked "seed" player-respondents to distribute our survey within their play groups and communities.

The research described in this article, including the use of appropriate informed consent procedures, was reviewed and approved by the Colorado State University Institutional Review Board (CSU IRB) for the protection of human subjects (protocol #2634). The research presented here was conducted between November 2021 and March 2023. For our interviews and observations, we relied on verbal consent, as that both minimized the chance that participants might be identified and was more practicable and appropriate for our ethnographic study where building rapport and trust with study participants in fluid and dynamic naturalistic contexts is so critical. This meant that we first explained our research to study participants—and provided respondents with supporting documentation—and then proceeded with the research only after receiving oral confirmation that respondents consented to participate. For our surveys, we followed the same verbal consent procedure when recruiting respondents. Then, the surveys themselves repeated that information, and by proceeding with the survey participants signaled that they consented to participate in our study. The CSU IRB approved these consent procedures.

Study Participants

In our first round of qualitative interviews (N = 24), conducted November–December 2021, we included participants of four different kinds of RPGs, including digital or video game RPGs (both single player RPGs and multiple player MMORPGs) and so-called "analog" RPGs typically played face-to-face and with interfaces that were sometimes aided by but not primarily digital (TTRPGs like D&D and LARPs). We also deliberately chose participants varying in gender and age, including players who identified as male, female, and non-conforming or non-binary and who were either between 18–25 or 26–35. We recruited interviewees from our personal gaming networks and used referrals to expand our interview pool. Interviews, typically 30–45 minutes in length, were recorded and accompanied by notes taken during the interviews themselves. Subsequent analysis and discussion of the interviews focused on summarizing key similarities and differences players established with their characters in the four RPG genres that were the focus the interviews. This purposive sampling approach, typical in qualitative and ethnographic research, allowed us to hear various gamer points of view on their relationships with their characters, with attention to contextual factors and capturing players' own perspectives on their gaming, rather than trying to estimate population parameters from our sample (Bernard, 2017; Bernard et al., 2017). Our sample size of 24 was adequate for capturing theme and meaning saturation according to current best practices (Wutich et al., 2024). Table 1 shows a demographic breakdown of this sample, with our interview questions presented in Appendix.

Table 1. *Study Participants.*

Interviews with RPG players (*N* = 24)		
Gender	Male	11 (46%)
	Female	10 (42%)
	Other	3 (12%)
Age, mean (*SD*)		23.8 (4.1)
Gaming genre	Single player RPGs	6 (25%)
	MMORPGs	6 (25%)
	TTRPGs	7 (29%)
	LARPs	5 (21%)
Interviews with TTRPG players (*N* = 12)		
Gender	Male	7 (58%)
	Female	5 (42%)
Age, mean (*SD*)		37.5 (12.3)
Game or dungeon master	Yes	6 (50%)
	No	6 (50%)
Surveys (*N* = 149)		
Gender	Male	95 (63.8%)
	Female	44 (29.5%)
	Other	10 (6.7%)
Age, mean (*SD*)		30.5 (11.9)
Gaming genre	Tabletop RPGs	46 (31%)
	Other RPGs	30 (20%)
	Non-RPGs	73 (49%)

In our second round of interviews (*N* = 12), carried out February–March 2023, we spoke exclusively to TTRPG players (again beginning with our personal gaming networks) about their relationships with their characters, this time speaking with a slightly older sample of male and female players. We made a point to interview players who had experience as game or dungeon masters (GMs or DMs) versus those who did not. These interviews were somewhat longer, typically lasting 60–90 minutes, and were recorded and this time fully transcribed. Our theme analysis focused on what constituted good and socially acceptable forms of character creation and roleplay, according to players' own personal standards and those of others in their gaming groups. Our modest sample size of 12 was adequate for helping us identifying the most common or salient themes on the topic of player-character bonds (Wutich et al., 2024). Table 1 again shows this sample's demographics, with Appendix detailing interview questions, along with additional details on our participant-observation within a LARP group.

For our survey phase of research, with responses collected between April–December 2022, we first again used "intentional" or "purposive" sampling (Bernard, 2017) and distributed our survey to members of RPG communities that were the focus of ongoing research, including within massively multiplayer role-playing games like World of Warcraft and Guild Wars 2 and single-player RPGs like Skyrim (all of these are video games and were the focus of interviews), as well as within tabletop RPGs such as Dungeons & Dragons (D&D) played more typically face-to-face and within live-action role-playing games (LARPs) played in a local park. We then asked those individuals (referred to as "seeds") to distribute the survey link to others in their personal gaming networks, in what is referred to as "snowball" sampling (Heckathorn & Cameron, 2017). Our connection with players of various other kinds of gaming communities from prior and ongoing research on video games also provided good seed and thus "snowball" sampling opportunities, with those games including first- and third-person shooters like Call of Duty, multiplayer online battle arenas (MOBAs) such as League of Legends, and sports games like FIFA Soccer. Overall, sampling from both RPG players and other kinds of gamers allowed us to capture variability in the study's primary predictor and outcome variables.

Table 1 shows descriptive statistics for the survey sample (*N* = 149), which was largely male (63.8%), not atypical given historical male dominance in many forms of gaming, with survey respondents' average age 30.5 (*SD* = 11.9).

Our respondents included roughly an equal number of RPG gamers (51%) compared to players of other kinds of games (49%), with the tabletop RPG players constituting 31% and the other RPG gamers 20% of the sample.

Survey Measures

Primary Predictor: Player-Avatar Relationships

We asked respondents to first answer questions about an avatar-character that was important to them and/or that they played frequently, including describing that avatar in detail. Guided by prior research (Banks, 2015; Banks & Bowman, 2016), we then asked players to report which of the following best captured their relationship to their character/avatar: *My character/ avatar is merely an object on a screen* (= 0, the baseline category), *My character/ avatar is me* (= 1), *My character/ avatar and I are part of each other* (i.e., having a symbiotic relationship with an avatar; = 2), *My character/ avatar is a separate being* (= 3).

Secondary Predictor: Avatar-Related Emotional Experiences

Following the above primary predictor questions, we then asked questions to measure the positive and negative emotional aspects of players' gaming experience. To do this, we asked respondents to recall a recent experience they had while playing that avatar-character that was important, meaningful, or memorable to them in some way, whether negative or positive. We asked them to describe the experience in a few sentences, then to reread what they had written so that they put themselves back in that moment, and subsequently to rate on a 0–4 scale (0 = *Not at all*, 1 = *A little bit*, 2 = *Moderately*, 3 = *Quite a bit*, 4 = *Extremely*) their experience of 10 positive and 10 negative emotions from the Modified Differential Emotions Scale (mDES; Fredrickson, 2013).

The positive emotional experiences, the responses to which we summed into a scale, included: amused, fun-loving, or silly; awe, wonder, or amazement; grateful, appreciative, or thankful; hopeful, optimistic, or encouraged; inspired, uplifted, or elevated; interested, alert, or curious; joyful, glad, or happy; love, closeness, or trust; proud, confident, or self-assured; serene, content, or peaceful.

The negative emotion items were reverse coded and added to the positive items: angry, irritated, or annoyed; ashamed, humiliated, or disgraced; contemptuous, scornful, or disdainful; disgust, distaste, or revulsion; embarrassed, self-conscious, or blushing; guilty, repentant, or blameworthy; hate, distrust, or suspicion; sad, downhearted, or unhappy; scared, fearful, or afraid; stressed, nervous, or overwhelmed.

This scale had good internal reliability, with a Cronbach's alpha of .88 and a McDonald's omega/Raykov's rho of .85.

Outcomes: Positive and Negative Gaming Experiences (Gaming Benefits and Risks)

We asked survey respondents to indicate on a series of 5-point Likert items how much 21 positive and 21 negative gaming experience items applied to their recent play over the past few days, weeks, or even months (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree*, and 5 = *Strongly Agree*). These scales have previously been ethnographically and psychometrically validated based on interview, observational, and survey data coupled with cultural consensus analysis (Snodgrass, Dengah, et al., 2017).

Each positive and negative gaming experience scale contained: six psychosomatic impacts (loosely, three more psychological and three more embodied or "somatic," though linked as in the case of an item asking about "adrenaline-fueled arousal"), six behavioral consequences (such as the game producing positive structure or by contrast boring and potentially compulsive routine), six social ones (like the game providing satisfying community or instead over-play creating social isolation), and three achievement items (as the game producing satisfying feelings of accomplishment or feeling more like a dead-end job, themes that emerged in ethnographic interviews and observations). As noted earlier, the 21-item negative experiences scale included eight classic "gaming disorder" symptoms commonly found in existing scales (such as cognitive preoccupation and withdrawal) and thus closely parallels formulations by medical institutions such as the American Psychiatric Association's (APA) and the World Health Organization's (WHO; Billieux et al., 2021; King et al., 2020; Petry et al., 2014). In addition, the scale contained 13 "problematic" play items, which also emerged from ethnography, but were not typical of "disordered" gaming, including experience of social isolation, excessive achievement orientations, and other themes.

Each of these scales had good internal consistency. For the 21-item positive scale, Cronbach's alpha was .87 and a McDonald's omega/Raykov's rho of .88. In the case of the 21-item negative scale, Cronbach's alpha was .90 and a McDonald's omega/Raykov's rho was also .90. (For further detail on these two 21-item outcome measures, see Appendix.)[2]

Other Gameplay and Demographic Covariates

Covariates in our regression analyses included: gaming genre, hours gamed per week, social support for gaming, age, and gender, which also provided us with points of comparison for relationships between our main predictors and outcomes.

To identify respondents' preferred genre of gaming, we asked them to think of a game that was particularly important to them and/or that they played frequently. These were coded as 1 = *Tabletop RPGs*, 2 = *Other RPGs* (e.g., digital or video game RPGs such as massively multiplayer RPGs or MMORPGs and single player RPGs,) and 0 = *Other games* (including massive online battle arenas or MOBAs, strategy and card games, first- and third-person shooters, sports games, fighting games, and single-player casual and puzzle games).

We also asked respondents how many hours they played per week, to assess their level of gaming involvement.

In a series of 10 questions, we asked whether respondents agreed that various persons and sectors of society supported gaming as a "positive and even healthy" activity: for each item, 1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Neutral*), 4 (*Agree*), and 5 (*Strongly Agree*). These questions were summed into a 10-item "Social Support" scale, where higher scores revealed gamers' sense that their play was more fully socially supported by society. Cronbach's alpha and McDonald's omega/Raykov's rho for this scale were both .74.

Finally, players provided age in years, and gender was coded 2 = *Female*, 1 = *Other*, and 0 = *Male*.

Statistical Analysis

We conducted regression analyses in Stata 18 (StataCorp, 2023), setting the type of player-avatar relationship as the primary predictor, avatar-related emotional experiences as a predictor of secondary interest, and positive and negative gaming experiences (benefits and risks) as the outcomes. We included in our analysis a selection of confounding variables, described earlier, that might bias estimates of the relationship between our key predictor and outcomes. We present results in a series of models. First, we show the relationship between player-avatar relationships (our primary predictor) and positive gaming experiences (Model 1; the first outcome), followed by a model that also includes avatar-related emotional experiences and the covariates as additional predictors (Model 2). This is followed by the same logic with negative gaming experiences as the outcome (Models 3 and 4).

In a second set of regression models, we used relating to an avatar as a symbiote as the reference category for this predictor to facilitate its comparison to other categories, aiming to assess how those player-character bond experiences varied in their relation to the outcomes compared to others (i.e., the avatar felt to be an object, me, or other person).

To aid interpretation of regression results, we standardized all numerical predictors and outcome variables so that each variable's coefficients show the estimated predicted effect of a 1 *SD* change in the relevant predictor means in terms of *SD* changes in the outcomes. However, categorical predictor variables (e.g., player-avatar relationship, RPG genre, and gender) were not standardized.

Ethnographic Illustration

Following the presentation of our survey results, we provide readers with interview excerpts to illustrate how specific player-character bonds—as a me, symbiote, other person, or object—were associated with positive, negative, and combined positive and negative play experiences. To identify excerpts, members of our research team proposed and shared relevant parts of interview transcripts and fieldnotes that showed 1) relationships between player-avatar bonds of the four types (me, symbiote, other person, object) and positive and negative gaming experiences and 2) contextual factors assessed in our survey (e.g., gaming genre, level of gaming involvement, etc.). Discussion of those excerpts led to consensus about the most representative and richest excerpts that could be used to enrich readers' appreciation of our numerical results. Given space limitations, we

chose only one excerpt per player-avatar bond. The excerpts presented here are thus illustrative rather than exhaustive, i.e., meant to help readers appreciate the role of personal and contextual factors in avatar- and gaming-experience processes (on similar ethnographic approaches to using exemplary excerpts in theme analysis, see for example Bernard et al., 2017; Ryan & Bernard, 2003; Snodgrass et al., 2020).

Results

Survey

Descriptive Statistics and Correlations

Regarding our study's primary predictor, 8.7% of our survey respondents related to their avatars as me, 28.2% as symbiotes, 33.6% as other persons, and 29.5% as objects, which is shown in Table 2. Respondents on average played 17.9 hours per week, though with considerable variation (*SD* = 16.7). Our respondents generally reported positive avatar-related emotional experiences, with a mean response on that scale measure 2.8/4, or just below a respondent saying that they experienced each of those emotions 3 (*Quite a bit*; negative emotions were reverse-coded). Similarly, respondents generally reported receiving support for their gaming, with a mean response on that scale being 3.4/5, or between 3 (*Neutral*) and 4 (*Agree*) that various sectors of society (on average) supported gaming as a "positive and even healthy" activity. Respondents reported a higher degree of positive as compared to negative gaming experiences, with the positive scale mean 3.7/5 (close to a 4 (*Agree*) that they experienced each of those positive scale items) and the negative scale mean 2.2/5 (generally saying they 2 (*Disagree*) that they experienced each of the negative items). Notably, only seven individuals out of 149 reported experiencing more negative compared to positive gaming-related outcomes.

Table 2. *Survey Study Variables.*

Factor	Level	Value	Skewness, Kurtosis
N		149	
Player-avatar relationships	Me	13 (8.7%)	
	Symbiote	42 (28.2%)	
	Other person	50 (33.6%)	
	Object	44 (29.5%)	
Hours gamed per week, mean (*SD*)		17.9 (16.7)	1.31, 4.60
Avatar-related emotion scale, mean (*SD*) (20-items, 5-pt Likert, 0–4)[1]		2.8 (0.66)[2]	−0.60, 2.68
Social support for gaming scale, mean (*SD*) (10-items, 5-pt Likert, 1–5)		3.4 (0.48)	−0.34, 2.98
Positive gaming experiences scale (benefits), mean (*SD*) (21-items, 5-pt Likert, 1–5)		3.7 (0.55)	0.026, 2.53
Negative gaming experiences scale (risks), mean (*SD*) (21-items, 5-pt Likert, 1–5)		2.2 (0.65)	0.87, 3.76

Note. [1]Negative emotion items were reverse-coded; [2] This and subsequent scale measures in the table were divided by the total number of items in the scale.

Table 3 shows correlations between our study's variables, with those consistent with our expectations. Thus, for example, the positive gaming experiences measure is positively associated with having positive avatar-related emotional experiences, hours played, and social support. By contrast, negative gaming experiences are negatively associated with that avatar-related emotional experience measure, social support, and age and positively associated with hours played. And hours played are negatively associated with age.

Table 3. *Correlations Between Study Variables.*

	Pos exp	Neg exp	Emotions	Hours	Social	Age
Positive experiences	1.000					
Negative experiences	−.003[a] (.975)	1.000				
Avatar-related emotions	.195* (.017)	−.260** (.001)	1.000			
Hours	.300** (< .001)	.307** (< .001)	−.032 (.703)	1.000		
Social support for gaming	.229** (.005)	−.200* (.014)	.090 (.275)	−.008 (.926)	1.000	
Age	.135 (.101)	−.288** (< .001)	.034 (.682)	−.187* (.022)	−.018 (.828)	1.000

Note. *p < .05; **p < .01; [a]Table entries are correlation coefficients accompanied by p-values in parentheses.

Player-Avatar Relationships as a Predictor of Gaming Experiences (Benefits and Risks)

Results in Model 1, with no controls for other covariates, show that players who related to their avatars as both a symbiote and other person reported substantially higher positive gaming experiences (respectively, b = 0.608, p = .004 and b = 0.588, p = .004) as compared to players relating to avatars as an object (the baseline category; Table 4, Model 1). Model 2 also included positive avatar-related emotional experiences, gaming genre (Tabletop RPGs, Other RPGs such as digital MMORPGs, and Other kinds of games), hours played per week, gaming-related social support, age, and gender. There, relating to an avatar as a symbiote and other person had a similar estimated coefficient as in the first model (b = 0.474, p = .032 and b = 0.477, p = .016), thus indicating that these covariates do not confound that original relationship and confirming H1b and H1c (Table 4, Model 2). Further, reporting a higher frequency of avatar-related positive emotions was associated with greater overall positive gaming experiences (b = 0.162, p = .034), as was playing longer hours per week (b = 0.316, p < .001), and experiencing greater gaming-related social support (b = 0.210, p = .006).

Table 4. *Gaming-Related Experiences (Benefits and Risks) in Relation to Predictor Variables, With Object the Reference Category.*

	Model 1			Model 2			Model 3			Model 4		
	Pos Exp (H1)	*SE*	*p*-value	Pos Exp (H1)	*SE*	*p*-value	Neg Exp (H2)	*SE*	*p*-value	Neg Exp (H2)	*SE*	*p*-value
Avatar is me[a]	0.325[b]	0.307	.293	0.107	0.298	.721	−0.593	0.305	.053	−0.554	0.270	.042
Avatar is symbiote	0.608	0.210	.004	0.474	0.218	.032	0.443	0.208	.035	0.723	0.198	<.001
Avatar is other person	0.588	0.201	.004	0.477	0.196	.016	−0.096	0.199	.631	0.078	0.178	.662
Avatar-related positive emotions				0.162	0.076	.034				−0.230	0.069	.001
Tabletop RPG players[c]				0.138	0.208	.507				−0.351	0.189	.065
Other RPG players				−0.131	0.207	.527				−0.159	0.188	.400
Hours per week				0.316	0.077	<.001				0.225	0.070	.002
Social support				0.210	0.075	.006				−0.142	0.068	.038
Age				−0.091	0.091	.319				−0.242	0.082	.004
Female				0.210	0.184	.255				−0.323	0.167	.056
Other gender				0.024	0.311	.937				−0.408	0.283	.151
Constant	−0.397	0.147	.008	−0.383	0.147	.010	−0.041	0.145	.779	0.081	0.134	.545
R^2	.07			.26			.09			.39		
N	149			149			149			149		

Note. [a] The baseline category is character is experienced as object; [b] Table entries are regression coefficients accompanied by standard errors and exact p-values in parentheses. The gaming experience outcome and continuous predictor variables have been standardized prior to analysis, but the categorical predictor variables (player-avatar relationship, RPG players, and gender) have been left in raw form as 0/1 predictors; [C] The baseline category is "Other games" players, e.g., MOBAs, shooters, sports games, fighting games, and single-player casual and puzzle games.

In the second set of regression analyses, results show that players who related to their avatars as a me reported fewer negative (or "problematic") gaming experiences (b = −0.593, p = .053) as compared to players relating to avatars as an object (the baseline category), while respondents relating to avatars as symbiotes reported more negative experiences of that kind (b = 0.443, p = .035; Table 4, Model 3). Those estimates were stable even after including covariates in the model (for relating to an avatar as a me or as a symbiote, respectively, b = −0.554,

p = .042; b = 0.723, p < .001), confirming H2b (Table 4, Model 4). Likewise, in that model including covariates, players with higher frequencies of avatar-related positive emotions also had fewer reported negative gaming experiences (b = −0.230, p < .001), as did Tabletop RPG players (b = −0.351, p = .065), those who experienced more gaming-related social support (b = −0.142, p = .038), older gamers (b = −0.242, p = .004), and female gamers (b = −0.323, p = .056). By contrast, those who played more hours per week reported higher frequencies of negative gaming experiences (b = 0.225, p = .002).

Finally, in relationship to our more exploratory RQ2, Table 5 shows the same results as in Table 4, though this time with the reference category changed to symbiote. As discussed earlier, this provides a baseline point of comparison where players experiences "discrepancies" between their actual and avatar selves, thus allowing for more direct engagement with SDT. In this analysis, with all covariates included in the model, we see as a new result that players who related to their avatars as me or other person (compared to the baseline symbiote category) reported similar positive gaming experiences or benefits; however, players relating to avatars as me or other person (compared to symbiote) reported substantially fewer negative experiences of those kinds (respectively, b = −1.277, p < .001; b = −0.645, p < .001; Table 5, Model 2).

Table 5. *Gaming-Related Experiences (Benefits and Risks) in Relation to Player-Avatar Bonds, With Symbiote the Reference Category.*

	Model 1			Model 2		
	Pos Exp	*SE*	*p*-value	Neg Exp	*SE*	*p*-value
Avatar is object[a]	−0.474[b]	0.218	.032	−0.723	0.198	<.001
Avatar is me	−0.367	0.296	.216	−1.277	0.269	<.001
Avatar is other person	0.003	0.192	.986	−0.645	0.174	<.001
R^2	.26			.39		
N	149			149		

Note. [a]The baseline category is character is experienced as a symbiote; [b]Table entries are regression coefficients accompanied by standard errors and exact *p*-values in parentheses. All covariates have been included in the models, as described in the methods and presented in Table 4. The gaming experience outcome and continuous predictor variables have been standardized prior to analysis, but the categorical predictor variables (player-avatar relationship, RPG players, and gender) have been left in raw form as 0/1 predictors.

Ethnographic Interviews and Observations

One of our respondents, Will, described a frustrating gaming experience playing as Link in the popular action-adventure game The Legend of Zelda.

> "There have been times where I would be in a position of the game that was extremely frustrating. For example, in The Legend of Zelda, I once got stuck where I was continuously loading into the game, getting one-shotted by an enemy monster, died, and then loaded back in (that's how the game works) only to die again. This was extremely frustrating. I felt that all the time I'd spent collecting materials, advancing in the quest, etc. was wasted because I would have to start a new save file, to avoid continuous death. I screamed some cuss words but tempered myself after being yelled at for yelling by my now ex [former partner]. However, after two hours [Will's emphasis] of inching my character away into a position where I was surrounded by virtual creatures that could end my life in one swift motion, then saving, then dying, then inching again, then saving, then dying, I was able to escape and resume my normal game activities."

Though Will speaks in the first person here, he was not able to personalize his avatar in this game in ways that would allow him to bond to Link as a self or as a distinct other person. Likewise, the storyline and setting were largely predetermined rather than resulting from Will's idiosyncratic choices and personality. As a result, Will related to Link more as an impersonal object or tool to accomplish gaming goals like quests. His initial emotional distress in this instance, and ultimately his triumph, were closely tied to his ability to master game mechanics and thus advance the computer-generated storyline. Will still told us he enjoyed the game greatly, but his pleasure was tied to how this game's challenges and sometimes emotional rollercoaster allowed him to powerfully immerse and thus lose himself temporarily in The Legend of Zelda's beautiful and engaging alternate reality.

By contrast, Jules, who played both analog and digital games, recalled her most cherished character, Mononoke, a knife-wielding wolf-like smuggler and freight-pilot. Jules had played Mononoke for over 20 years, with versions

of this character appearing in the tabletop roleplaying game Dungeons & Dragons, but also in digital games like Skyrim and Mass Effect and as a fursona or "furry persona," that is, a personalized animal character used by members of the furry community to represent themselves to other furries. As a result, Jules developed a powerful personal relationship with Mononoke, and the two of them changed together over the years. For example, as a trans woman, Jules described to us how her personal connection to Mononoke as an extension of herself—first as an ideal self and eventually as her authentic or true self—helped her explore and eventually physically transition to her new feminine identity:

> "So, for me, the biggest thing is the role-playing. And this is interesting. This is unique for me as a trans person. It affords me the space to create this fantasy character that's physically all these things that I want to be as a human in this world, that just because of stupid rules of biology and physics and all that nonsense, I can't. It's the reality, it's the ability to step out of who I am as an actual person and kind of play this other character."

Additionally, Jules noted that even from early on in her life as a teenager she utilized Mononoke to explore and eventually clarify her true gendered identity, while also reflecting on how her motivations to play Mononoke changed over time as her actual- and game-world identities became more comfortably aligned with each other:

> "After the transition, at least for me, I'm not speaking for all trans people, but I believe and what I've talked about with some of my trans friends, is that there is a certain point where the transition no longer becomes about the gender piece. For example, people from the millennial generation, I know that we spend all this time trying to figure out what's wrong, right? And so, through all of puberty, you're just confused and angry, and you're trying to be some kind of person. And so, you never just like yourself because you're always trying to be somebody else. Usually something's wrong. I need to try on all these different hats to figure out what's going on, right? And so, once you have that freedom to just be like, OK, I got the gender identity. I'm looking the way that I wanna look. I feel the right kind of way, like with the hormones and everything, and then you have this moment where you're like, but who am I? I'm connecting this back to the character because I was in these chat rooms all the fucking time and being a certain kind of way and then that character changed almost entirely, like overnight and then it kind of became this thing of like, who am I as a person? And I'd be looking at, you know, all the iterations of Mononoke."

Despite largely positive experiences with Mononoke, Jules still noted challenges of playing Mononoke, like when she encountered transphobia and misogyny in certain gaming groups. She also spoke about the difficulty of integrating into her actual life the truths about herself and her identity she discovered while playing Mononoke across various games:

> "You can still exist in your own way in the fantasy worlds and these wonderful pictures and forums and whatnot. But I need to take who I am back and figure out how to integrate it into my actual life so that I can just be who I wanna be, you know, while also maintaining this character while I was lost. As a trans person, I was able to preserve my true personality, my demeanors, my perspectives, and stuff on the world through these characters, while I was in the darkness. That's why she's my favorite character."

Despite these risks and challenges, Jules experienced Mononoke overall in highly positive terms, in the manner that Mononoke allowed her to both discover her true gender identity and to develop coping and survival skills for combating an oftentimes transphobic society. Jules, then, not only extended her actual self via Mononoke into various gaming worlds, but also became a new and better self as she and Mononoke learned from each other and evolved together.

In similar terms, Rosca, an avid tabletop roleplaying gamer who sometimes connected digitally with her gaming friends over the internet, described how her development of a highly personal bond with her characters—as proxies for her actual self—helped her work through personal life challenges like the following:

> "When I was younger, I had a back injury and I had to quit dancing. Then I had a character who had an injury who had to quit her performative career. At the same time, I was playing that character, I lost my job in the middle of the pandemic. That ended up like having this weird dual process of, 'Okay, let me deal with this trauma my teenage years and then the thing that I'm going through right now.' Playing that character throughout 2020, having my friends both on camera and off camera. That was

> the thing that I needed to remind me that, you know, if this character is okay, and she is surviving, and she has all her friends, and I have all my friends, I'm going to survive too."

In this case, Rosca described how she had been playing with the same group of friends for several years. And it was that deep bond with her fellow players that allowed her to successfully overcome this health challenge. Meeting regularly for weekly online games, Rosca grew closer to the other players in her group and therefore felt freer to play characters who more closely reflected her actual life challenges. In her discussions with us, Rosca commonly cited community encouragement alongside her character play as being primary contributors to her positive gaming experiences and indeed to her mental well-being. But likewise, discussions with Rosca and other gamers revealed that unsupportive gaming groups—or even just playing with strangers—could both interfere with their gaming enjoyment and even lead to distress. In those cases, the lack of innate trust, developed over years of play together, could make personal experimentations like this one either impossible or at least ill-advised, as it was unclear how other players would respond to such emotional honesty and vulnerability. Rosca's relationship to her character, then, both reflected her own past and allowed her to reframe it. In this sense, Rosca combined in her character both her actual self and other imagined traits like magical powers, personal assertiveness, and even overly exaggerated flaws. Rosca's relationship with her character is thus best described as symbiotic, in the combination of self and other. And as we see here that symbiosis provided Rosca with therapeutic benefits, though the context of play—say, with close friends or strangers—determined how or whether she experienced those benefits.

Finally, building personal relationships to avatars as others provided one participant in our study, Adrianna, with powerful emotional experiences both in and out of game. Adrianna spoke to us about playing Magda, a werewolf, first developed in the tabletop RPG Savage Worlds and played over years with a consistent gaming group. Whereas Adrianna's religion prohibited certain behavior like using profanity, Magda was a pack leader who used profane language:

> "…her ability to deal with the world…me being able to throw all kinds of bad things scary things at myself essentially and be able to push back in overcome them…She's also very unlike me, in that I'm very religious. I've also always been somewhat of a prude…Magda is not like that…[she] uses that vocabulary. I don't but she does. So, what I've learned, Magda, she drops 'F-bombs' every third sentence. And that's just what she does. And so, you know, very different for me in that respect."

Adrianna also told us that by playing characters like Magda who were different from herself she learned how to empathize with persons espousing different religious beliefs, for example:

> "…it's helpful to see things from another perspective. I know, one time I played a Muslim character. And I did that because I'd never played a Muslim character, what the heck. And suddenly, I understood the objection to prayer in schools. You know, I never really got that. It's like, well, what's the big deal? So, you don't pray? Don't pray, whatever. But then I imagined, yeah, what if I'm Muslim, and I'm sitting there and they're all praying to Jesus, and they're looking at me because I don't. And it suddenly struck me it's like, oh, okay, I get it, I get why that bothers people."

And as with Jules and Rosca, Adrianna's playing of characters—but this time as distinct others different from herself—helped her overcome personal adversity and become more resilient in the face of stress and trauma:

> "I was just drawn to the idea of playing the character who's the medicine, in fighting through all that… I'm a cancer survivor. And when I had cancer, it was actually in this timeframe that we were playing. And one of the things I learned about role playing…is that stepping into the shoes of somebody else can help you get through a lot of things. And so, dealing with cancer, I kind of naturally started thinking of Magda because she's tough, right? She can get through anything. So, this one of the tests I had to go through was a CT scan to see if the cancer spread. And it was scary…I have all these fears in the back of my mind. So, I'm thinking, Okay, I'm gonna be Magda, Magda can do anything. Magda is not scared, she can get through this… And so, the nurse comes over, she gives me an injection. And again, I'm thinking as Magda, and I'm a werewolf, so I growled…I told my group about that later that he growled at the nurses. I'm sorry, I was being Magda…bleeds over into real life there."

As with earlier illustrations, Adrianna's close relationship with others in her playgroup allowed her to play personally meaningful characters like Magda and indeed to share her cancer stories with them. However, in this case, Adrianna plays characters who are distinct others rather than proxies for herself. And it is that distinctiveness

and distancing that proves enjoyable and useful in this context, in the way that Adrianna draws strength from Magda who differs from her in important ways, as one might from an inspiring friend.

Discussion

In our study, we aimed to broaden SDT perspectives (Higgins, 1987, 1989) on relationships between player-avatar relationships and overall gaming experiences. To do so, we did not assume as is common in the SDT literature on this topic that players relate narrowly to their avatars as identity vehicles via which they might improve themselves (Bessière et al., 2007; Li et al., 2021; Mancini et al., 2019, 2024; Sibilla & Mancini, 2018; Stavropoulos et al., 2023; Szolin et al., 2022). Instead, we considered the broader question of how relating to avatars in more personal terms—i.e., as a me, symbiote, other—as compared to as mere tools or objects (Banks, 2015) might differentially predict positive, negative, and balanced positive-negative gaming experiences (Snodgrass, Dengah, et al., 2017). Our approach entailed conceptualizing symbiotic relationship to an avatar—where players integrate heroic, monstrous, or other kinds of traits into their character identities (Dengah & Snodgrass, 2020; Sibilla & Mancini, 2018)—as situations involving discrepancies between players' actual and virtual selves. This broader perspective on actual-virtual self-discrepancies went beyond narrower treatments of avatars as idealized identities and thus allowed us to test in new ways SDT understandings.

Our study led us to partially confirm H1 by demonstrating that players having a more personal relationship with an avatar—as a symbiote (H1b) or other person (H1c)—had substantially higher positive gaming-related outcomes (Table 4, Model 2). In each case, reporting such avatar experiences was associated with approximately half of a *SD* increase in positive overall gaming experiences. These results were greater than the effect of, for example, increases of +1 *SD* in hours played per week or gaming-related social support in relation to this outcome. Such results are consistent with the idea that developing personal and interpersonal relationships with an avatar—as either a virtual extension of the self or as a friend or companion—might help players improve upon perceived shortcomings related to identity and social isolation and loneliness (Bozoglan et al., 2013; Kardefelt-Winther, 2014; Schiano et al., 2014; Snodgrass, Batchelder, et al., 2017; Snodgrass et al., 2016, 2018). The relationship between experiencing an avatar as a me (H1a) pointed in the same direction in relation to the positive gaming experience outcomes (Table 4, Models 1 and 2), yet was small and imprecise due in part to the small frequency in our sample of persons with the me relationship (N = 13).

Such findings were also echoed in our qualitative data. For example, Will's gaming pleasures emerged from his motivation to achieve rather than his relationship to his avatar Link per se, which, given The Legend of Zelda's mechanics, was rather impersonal (related to these points, see for example Golub, 2010; Rehbein et al., 2021; Snodgrass, Batchelder, et al., 2017; Snodgrass et al., 2016; Taylor, 2012). By contrast, Jules eventually found in Mononoke her true or authentic self—more like a me, with a close alignment between herself and her character—and consistent with prior research benefited from strong senses of embodying that true or actual self in virtual worlds (DeVeaux et al., 2023; Jin, 2012). However, before her gender transition, Jules bonded symbiotically with Mononoke, in the sense that she enacted in Mononoke a more ideal self or how she wanted to be but could not given actual-world constraints (Bessière et al., 2007; Dengah & Snodgrass, 2020). Likewise, Rosca's highly personal symbiotic relationship with her character contributed to the benefits she derived from gaming, which helped her overcome among other things a health challenge related to her dancing (Bessière et al., 2007; Dengah & Snodgrass, 2020). The same could be said for Adrianna's relationship to her werewolf character Magda. In that case, relating to Magda as one might a close friend or companion helped Adrianna grow in her empathy towards others (Montola & Holopainen, 2012) and remain resilient in the face of a cancer diagnosis (on how gaming builds resilience, see for example Bowman & Schrier, 2018; Causo & Quinlan, 2021; Enfield, 2007; Henrich & Worthington, 2023; Snodgrass et al., 2020). In these cases, it may be that these ways of identifying with their avatar allow for narrative explorations of situations, themes, and concepts that reduce identity threats (Slater et al., 2014). The immersive worlds provided by gaming facilitate the engagement of challenging situations without immediate real-world consequences, thus allowing individuals the space to experience and process viewpoints, emotions, etc., in a safe and therapeutic way.

We also partially confirmed H2 in our survey analysis by finding that players demonstrating a symbiotic relationship with avatars (H2b)—as a kind of extension of the self into a virtual world—was associated with higher reports of negative gaming experiences and thus problem gaming compared to relating to a character as an object or tool (Table 4, Model 4). Having such a relationship with an avatar represented almost three-quarters of a *SD* increase in reported problem gaming, which is substantially greater than the effect of, say, a +1 *SD* increase in

hours played per week on problem gaming. This result is consistent with understandings of how such forms of play might represent attempts to compensate for perceived personal and interpersonal shortcomings, which could lead players to over-invest in virtual identities (Brown, Burleigh, et al., 2024; Green et al., 2020; Király et al., 2023; Stavropoulos et al., 2023; Szolin et al., 2022). However, contrary to our expectations, players relating to avatars as me (H2a) demonstrated much less problem gaming: that form of avatar experience was associated with over a half of a *SD* decrease in problem gaming (Table 4, Model 4). The latter result, harder to explain according to current theory pointing to the risks of over-investing in avatar-selves experienced as "inserts" into virtual worlds (Bowman, 2013b; Bozoglan et al., 2013; Snodgrass et al., 2012, 2018; Stenros & Bowman, 2018), could again reflect the small sample size of this group.

These results were also echoed in our ethnographic interviews and observations. Will's sometimes gaming-related distress, like his pleasures, emerged from structural characteristics (or design features) of The Legend of Zelda rather than to his bond with his character Link per se (e.g., Rehbein et al., 2021). By contrast, both Jules and Rosca, each of whom bonded at times symbiotically with their characters as an ideal self, were vulnerable to distressful gaming experiences depending on the context, e.g., if they played with strangers rather than trusted friends (in Rosca's case) or encountered transphobia and sexism (as Jules did; on such conflicts, see for example Bowman, 2013a, 2013b; Nardi & Harris, 2006). Further, such distress seemed to emerge in part from their deep emotional investment in their characters, which, while potentially magnifying their evident positive gaming experiences, also rendered them more emotionally vulnerable in the way they strongly bled into their virtual identities (Bowman, 2013a) or used characters as alibis to explore in their play challenging and even taboo but nonetheless personally meaningful topics, such as within Grand Theft Auto V (Deterding, 2018; Stenros & Bowman, 2018). We might surmise that such distress could result in some cases in disordered gaming, though we did not see that in these two individuals. Rather, these two players gaming-derived pleasures and benefits clearly outweighed any risks, thus pointing to the importance of context and experience over time in any assessments of disordered gaming (e.g., Snodgrass, Batchelder, et al., 2017; Snodgrass et al., 2016; Snodgrass, Dengah, et al., 2017).

As illustrated above in the interview excerpts, we found that many individuals experienced a mix of positive and negative gaming experiences, due in part to their bonds with their characters, though positives generally outweighed the negatives. To us, this highlights again the importance of attending to context and play experience over time in any assessments of problem play. Many individuals might game problematically at particular points in time, and depending on how the questions were asked, though such assessments were less likely once larger personal and gaming contexts were considered, as others have argued (Billieux et al., 2019; Schimmenti, 2023; Snodgrass, Dengah, et al., 2017; Snodgrass et al., 2018). Negative experiences, while stressful, may also be beneficial. Experienced as eustress, for example, overcoming challenges can lead to salubrious psychological and social outcomes (Snodgrass et al., 2016).

We also confirmed H3 by showing how players who reported higher avatar-related positive emotions also experienced greater overall positive gaming experiences (benefits) and fewer negative gaming-related experiences (risks; Table 4, Models 2 and 4). This finding is consistent with prior work suggesting how emotionally relating to avatars in more personal ways will be accompanied by positive experiences, thus potentially illuminating an important dimension of player-avatar relationships that might influence overall gaming benefits and risks (Banks & Bowman, 2016). Our qualitative data also pointed to the important role of emotion to the avatar-related processes considered in our study—e.g., Will's initial frustration and then eventual pride in his accomplishments and Adrianna's growing emotional empathy—though a deeper analysis of that data would be required to specify the exact role played by specific emotions in relation to those processes.

Further, our qualitative data also helped us identify the other variables (e.g., game genre, social support, age, gender) that might confound the relationship between player-avatar bonds and broader gaming experiences. For example, tabletop role-playing games provide greater opportunities to relate to characters as alternate selves and distinctive overall gaming experiences, as is evident in Jules's, Rosca's, and Adrianna's descriptions compared to Will's. Jules's play across multiple gaming genres shows the importance of accounting for overall intensity of gaming involvement. Jules and Rosca emphasize the role of social context such as gaming groups for social support (or lack thereof), demonstrating how group dynamics can shape both the extent that players emotionally invest in characters and their overall play experiences. Age and gender also played roles in the processes we described, in that those two factors could shape both how comfortable players felt to express themselves personally via their characters and the overall quality of their play experiences. We see this for example in Jules's and Rosca's reference to their teenage years and Jules's in particular gendered play experiences. Our ongoing

qualitative observations and interviews were critical both in initially identifying and then subsequently interpreting the role played by covariates in our survey analysis.

Also, in relation to RQ2, we found that the relationship between playing symbiote avatars with overall positive gaming experiences was distinguishable from how playing avatars felt to be objects were linked to that outcome (Table 5, Model 1). Symbiotic experiences were also consistently more strongly associated with negative gaming experiences compared to each of the other forms of player-avatar bonds (Table 5, Model 2).

These final results demonstrate even more directly how SDT approaches to player-avatar bonds can meaningfully illuminate both gaming benefits and harms, as is consistent with prior research (Bessière et al., 2007; Dengah & Snodgrass, 2020; Giardina, Schimmenti, et al., 2024; Mancini et al., 2019, 2024). As we framed it, symbiotic bonds with avatars serve as a proxy for a range of situations involving discrepancies between a player's actual and avatar selves. This broader approach allowed us to assess SDT perspectives on gaming benefit and harm, while remaining neutral on the question of whether the avatar might be experienced as heroic or monstrous, and thus representing a personally or socially idealized identity or not (Dengah & Snodgrass, 2020).

In practical terms, our analysis suggests overall that developing therapeutic games for use in clinical encounters (Arenas et al., 2022; Shah et al., 2018; Turner et al., 2016) might profitably be informed by SDT theory, given, for example, how players' symbiotic bonds with avatars are linked to positive gaming benefits. Nonetheless, they might equally focus on promoting relating to avatars as a separate other person, given how players also reported gaming benefits in those forms of play. Likewise, given the consistent link of symbiotic relations to avatars with negative gaming experience, that relation seems to indicate a higher risk of problematic play, thus showing that SDT approaches offer some predictive value for assessing problem gaming, as others have argued (Blinka et al., 2023; Giardina, Schimmenti, et al., 2024; Stavropoulos et al., 2023; Szolin et al., 2022). Still, the fact that symbiotic bonds to an avatar—where players experience discrepancies between their actual and virtual selves—is related to both overall gaming benefits and risks leads us to remain more circumspect on whether such bonds are indicative of problem gaming. Having an indicator—like symbiotically relating to an avatar—positively associated with both healthy and problematic forms of gaming makes it of dubious utility as a clinical diagnostic tool for gaming disorder. In our opinion, such indicators should more narrowly predict only the negative outcomes (Infanti et al., 2024). SDT approaches, then, are useful in assessing gaming experience, but nonetheless we suggest the need for caution if claiming distinctive benefits or harms associated with gaming where players experience discrepancies between their actual and avatar selves.

Finally, SDT research identifies links between discrepancies in individuals' various concepts of Self—like between a perceived actual and ideal self—and mental health and well-being constructs such as depression/anxiety, self-esteem, and self-efficacy (Barnett et al., 2017; Higgins, 1989; Higgins et al., 1985; Mason et al., 2019; Schlechter et al., 2022; Scott & O'Hara, 1993). This suggests that player-avatar bonds, construed as they are in our research in reference to SDT, might influence not only positive and negative gaming consequences, as documented in the current study, but also mental health and well-being from a clinical psychology perspective. In support of this, we would remind readers of the overlap between our negative gaming consequences measure—a form of what we call "problem" or "problematic" gaming—and standard clinical assessments of gaming disorder (Snodgrass, Dengah, et al., 2017). Future studies might thus profitably focus explicitly on connections between player-avatar bonds and clinical outcomes like depression and anxiety or well-being measures like self-esteem, with the idea that forming certain kinds of player-avatar bonds might improve health and well-being in these clinical and psychological perspectives.

Limitations

Our analysis of cross-sectional survey data hinders drawing causal links between player-avatar relationships and overall gaming experiences. Nonetheless, from current theory, we deduce that player-avatar relationships represent fundamental orientations toward play, which are likely rooted in deeper personality and motivational structures (Mancini et al., 2024). It is thus reasonable to think that those pre-existing characteristics and such avatar experiences are causally prior determinants of players' overall experiences of gaming-related psychosocial risks and benefits. In our analysis, we were only able to statistically account for gaming genre, gaming involvement, felt social support for gaming, age, and gender. Future work collecting and analyzing other potential confounders as well as using experimental and longitudinal data would be useful. Finally, our sample of gamers does not represent any larger gamer population and might contain an excessive fraction of players with positive as compared to negative gaming experiences. While this may be due to selection bias, it is also consistent with our

ethnographic observations that gaming, for most people, is a positive influence in their life. Additionally, while our sample size is common within cultural anthropology (Guest et al., 2006; Smith & Little, 2018), further research with larger samples from diverse contexts would be necessary to support our quantitative findings.

Conclusion

Prior SDT research has yet to systematically and explicitly examine the way that players' broader experiences with avatars—not just as self- or identity-proxies (a symbiote or me), but also as other persons or as impersonal objects—might be associated with both positive and negative gaming-related outcomes. In the current study, we show that having symbiotic bonds with an avatar—where players experience discrepancies between their actual and virtual selves—are linked to both positive and negative gaming experiences, thus confirming prior SDT research. Nonetheless, we are unable to establish distinctive benefits and balances of benefits compared to harm of such forms of play, thus rendering less clear the applications of SDT thinking and analysis to either the development of therapeutic games or to clinical diagnoses of gaming disorder. In contrast to prior research, our results apply not only to video games but also to other RPG games like those played on tabletops, which greatly extends the implications of our study.

Footnotes

[1] Cultural consensus analysis (CCA) methods have been widely used in diverse disciplines, proving particularly useful in medical anthropological investigations (Dressler & Bindon, 2000; Gravlee et al., 2005; Weller, 2007). Combining interviews, observations, and more structured methods like free-lists, a CCA researcher first identifies a series of statements that constitute a culturally agreed upon cognitive domain (Bennardo & De Munck, 2014; Johnson et al., 2002; Romney & Weller, 1988; Ross, 2004). Informants' responses to these statements are presumed to be a function of their cultural competence, that is, their knowledge of the culturally correct responses to these questions (termed the answer key in CCA), as well as a random component, since any informant's knowledge is imperfect and incomplete. The statistical procedures of CCA recover this unknown answer key and measure the cultural competency of each informant according to this key. The statistical criterion most commonly used to assess the fit of the model to the data is the ratio of the first to second eigenvalues from the factor analysis typically used to estimate the competence scores (but cf. Lacy et al., 2018 for an alternative fit measure). In this context, roughly speaking, this ratio measures the extent to which a single cultural group accounts for the patterns of agreement among informants. By convention, an eigenvalue ratio of 3:1, along with the absence of negative competence scores, has been a traditional rule of thumb indicating adequate fit of a single common cultural model.

[2] For the positive gaming experiences scale, a factor analysis (principal factor extraction, unrotated) gave a first eigenvalue of 5.73 (66% of the variation) and a second eigenvalue of 1.39 (16% of the variation), with no other eigenvalue exceeding 1.0. For the negative gaming experiences scale, the factor analysis gave a first eigenvalue of 6.77 (69% of the variation), and a second eigenvalue of 1.29 (13%) of the variation. No other eigenvalue exceeded 1.0. Both of these would satisfy conventional criteria for retaining only one factor (eigenvalue ratio exceeding 3). On this basis, along with the alpha and omega coefficients suggesting high internal reliability, treating these scales as unidimensional is reasonable.

Conflict of Interest

The authors have no conflicts of interest to declare.

Use of AI Services

The authors declare they have not used any AI services to generate or edit any part of the manuscript or data.

Authors' Contribution

Jeffrey G. Snodgrass: Conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, supervision, visualization, writing—original draft, writing—review & editing. **Seth I. Sagstetter:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **Alessandro Giardina:** Conceptualization, writing—original draft, writing—review & editing. **Julia R. Branstrator:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **Michael G. Lacy:** Conceptualization, data curation, formal analysis, investigation, methodology, software, visualization, writing—original draft, writing—review & editing. **Aaunterria Treil Bollinger-Deters:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **Chaz L. Callendar:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **Katya Xinyi Zhao:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **H. J. François Dengah II:** Conceptualization, investigation, methodology, writing—original draft, writing—review & editing. **Joël Billieux:** Conceptualization, supervision, writing—original draft, writing—review & editing.

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Appendix

Survey Measure of Positive and Negative Gaming Experiences (*N* = 149)

Positive Gaming Experiences

Use the following scale to indicate how much you agree that each of these items applies to your play over the past year (i.e., last 12 months).

1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Neutral*), 4 (*Agree*), and 5 (*Strongly Agree*).

1. I look forward to when I'll play next with anticipation and enthusiasm.

2. I find that gaming helps me relieve frustrations and improve my mood.

3. I feel that gaming can give me focus and even purpose in life.

4. I experience positive rushes of adrenaline and energy when I play, especially when defeating tough enemies and opponents.

5. I find it satisfying and even exhilarating to push my body by gaming long hours.

6. I feel calm, relaxed, and in control at certain points in the game.

7. I find that games provide my life important regularity and structure.

8. I enjoy having my skills pushed to the limits.

9. I find it satisfying to repeat challenging gaming actions over and over again until they are nearly perfect and automatic.

10. I enjoy gaming for fun over other hobbies and habits.

11. I find that gaming takes my mind off of problems I'm facing in my life.

12. I put effort into improving my game in order to grow and evolve as a player.

13. I experience an easy and sometimes instant connection with other gamers.

14. I find that connecting to diverse people via gaming expands my social circle and perspective on life.

15. I enjoy the sense of belonging that comes with being a part of a community of gamers.

16. I worry less about how my actions and words might be perceived by others in gaming contexts.

17. I find that playing games with friends and family strengthens those relationships.

18. I form strong bonds with other gamers, feeling that I can rely on them and am willing to offer them help.

19. I feel satisfaction in sticking with a gaming goal until it is completed, even though this might entail a lot of hard work.

20. I find that overcoming difficult gaming challenges helps build my confidence to deal with life's problems.

21. I develop important skills through gaming that helps me advance in both careers and life.

Negative Gaming Experiences

Use the following scale to indicate how much you agree that each of these items applies to your play over the past year (i.e., last 12 months).

1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Neutral*), 4 (*Agree*), and 5 (*Strongly Agree*).

1. I find it difficult to concentrate on other activities because I am thinking about gaming.

2. I feel frustrated and disappointed and get in a bad mood when I don't play well.

3. I feel that gaming isn't the best use of my time and often wish that I could have done something more productive or useful.

4. I feel mentally and even physically drained after long and intense gaming sessions.

5. I push my body too far, not eating or sleeping right, when I am gaming.

6. I get fidgety and irritable when I can't game.

7. I get obsessed in a bad way about a game, even feeling like the game is taking over my life.

8. I find it difficult to control or limit my play, gaming too much and at inappropriate times.

9. I often reach a point where gaming can be more of a boring routine than actual fun.

10. I find that gaming a lot makes it more difficult to enjoy other activities in my life.

11. I use gaming to avoid challenges in my life rather than deal with them directly.

12. I have to game more and more to get similar feelings of enjoyment and satisfaction.

13. I game so much that I find myself isolated and lonely.

14. I get too caught up in other gamers' opinions, perspectives, and demands.

15. I keep gaming even when I think other gamers are producing a "toxic" rather than supportive community.

16. I get annoyed and angry when players don't take responsibility for their words and actions.

17. I find that playing games leads to conflicts with my friends and family.

18. I feel that I have to play for my gaming friends even when I don't want to.

19. I experience gaming more like a draining job than something I love.

20. I get upset and even feel bad about myself and my abilities when I lose or don't play well.

21. I think I could be more successful in life if I didn't spend so much time and energy gaming.

Interviews With RPG players (N = 24)

Reminder: When beginning the interview, make sure to specify that we're asking each interviewee to think about a specific RPG genre when answering the questions (i.e., single-player computer RPG, MMORPG, TTRPG, LARP). Make sure their RPG is the type we specified for that participant in the sampling frame (i.e., if we have them as a tabletop player, make sure they're discussing a tabletop character).

Questions.

1. What is your current primary RPG genre you are involved in? (computer RPG/ MMO, TTRPG, LARP; we want to know this, even if it is different from the focus of the interview, based on where they fit in the sampling frame)

2. Think about a gaming avatar or character that you've had a strong connection to. (Have respondents identify avatar/ character and game.)

3. Tell us a little bit about the creation and customization of this avatar/ character. (Focus not just on technical things, but on their motivation to create characters in certain way and why.)

4. What are some terms you associate with your gaming character?

a. Probe: Can you describe your character some more? Are there any other traits or characteristics of your avatar? (use after initial response to elicit further terms that are less salient)

b. Probe: What do you mean by X? Can you elaborate? (use sparingly on items that would likely yield important insights)

5. What is your character to you? [let them answer first without probing, i.e., if they ask what you mean, say something like, "We really want to hear your ideas first, however you interpret the question…"]

a. Probe: Briefly explain how you think and relate to your character.

b. Probe: In what way do you think of your character in this sense?

c. Probe: Based on what you say, you see your character as X (self/ object / other / symbiote). Right? Explain more what you mean by this.

6. How do you commonly feel when playing your character?

a. Probe: Are there any particular feelings or emotions that you associate with your character? (use after initial response)

b. Probe: Can you elaborate on an instance when you feel X emotion/ feeling with your character? (use sparingly)

c. Probe: Can you think of any other feelings or emotions? (to elicit more terms)

7. What's the most memorable moment or experience as/with this character?

a. Probes: see Bernard, e.g., silent, tell-me-more, grand tour, etc.

b. Probe: Can you think of another particularly memorable moment with this character?

8. Has this character impacted you or your life in some important way? If yes, tell me about it.

a. Probes: see Bernard, e.g., silent, tell-me-more, grand tour, etc.

9. Is there anything else you want to add about your character and what it means to you?

10. Demographics:

a. Age

b. Gender

c. Hours gaming per week

d. Main gaming genre and games

11. Can you recommend anyone else we might interview, i.e., someone who plays RPGs? (name and contact info)

Interviews With TTRPG players (N = 12)

Questions.

1. How long have you been involved in TTRPG? How often do you play? What rule system do you typically play? Do you typically play face-to-face or with a virtual tabletop?

2. Are you currently in a group, or playing a specific TTRPG?

a. Where does your group currently meet?

b. How many members are in your group?

c. Other relevant details?

3. Why do you play TTRPGs?

4. Tell us about your favorite and/or main character. Who, or what, is that character to you?

a. Probe: How long have you played this character? Are you currently playing this character?

b. Probe: What inspired the creation of this character? Additional probe (after letting them answer): Did you draw on any specific experiences or sources in this character's creation? Try to be as specific as possible.

c. What aspects of playing this character make this character your main/favorite character?

5. Tell me a little bit about how you create and roleplay your character. Are there certain personal principles and/or patterns you follow in the way you create and roleplay your character?

a. Probe: try to list at least 3–5 personal standards (if any) and why they follow those standards (if relevant)

b. Probe: why are these standards important to you? What benefits might they bring to your play experience?

c. Probe: are you typically drawn to a specific class, race, or character archetype?

d. Does playing characters in these ways impact you in ways outside of the game? If so, how? Here, if you feel comfortable, you could tell us a little bit about yourself and how that shapes your gameplay, motivation to play, etc.

6. Tell us about your favorite and/or main group(s). What is this group to you?

a. Probe—what are groups you play with the most, groups you like(d) the most. Why?

b. Probe—what were some groups you like(d) the least. Why?

c. What is it about these groups that appeal (or not) to you?

7. Tell us about how other members of your group create and roleplay characters. Or maybe your GM promotes a certain style of play. What are the principles and/or patterns your group-members or GM adhere to or consider during gameplay?

a. Probe: try to list at least 3–5 group principles (if any) and why the group instituted those principles (if relevant)

b. Probe: how do you establish these standards? Prior to gameplay? On session 0? As you go?

c. Probe: is there a system in place for when these standards may be broken?/breaking of these standards? How does your group approach this?

d. How might these standards better (or compromise) your play experience?

e. Does playing this way benefit you outside of the game sessions? Here, if you feel comfortable, you could tell us more about the makeup—even demographic makeup—of your group and how that might shape play activities and experiences.

8. Have you seen other TTRPG play styles (character creation, roleplaying etc) that you found attractive or wanted to emulate? Please explain, and try to list a few of the features of that playstyle.

9. What about styles of character roleplaying you have seen that you would want to avoid? Explain, and try to list a few of the features of that playstyle.

10. Does your group use a particular safety tool kit?

a. Probe: for context, safety tools are, "a way for players and GMs to communicate and check-in before, during, and after a game in order to make sure everyone is still having fun, and to provide the right support when needed."

b. Does that work well? What are its benefits and limits?

11. That's all the questions we have related to game play. If you like, please provide us with any other relevant details related to our questions and/or to character creation, role playing, and the tabletop games you currently play or played in the past, their contexts, who you play with, etc., anything you see as relevant to help us understand your play experience.

12. Demographics

a. Age

b. Gender

c. Hours gaming per week

d. Main gaming genre and games

13. Can you recommend anyone else we might interview, i.e., someone who plays RPGs? (name and contact info)

Participant-Observation With Live-Action Role-Players (LARP)

Between September–November 2022, we observed weekly and documented through fieldnotes a local live-action role-playing (LARP) group, with a typical session lasting between 3–4 hours. The group averaged twenty players, with numbers dwindling in the winter months due to the outdoor nature of the activity. The group was primarily white males, with many claiming European descent, and two Asian American players who joined infrequently. Around one third of the players were women, with one player at the time identifying as non-binary. Age varied greatly, between twelve at the youngest and reaching the upper fifties, though it averaged out to the mid-thirties. Many of the older players brought along their families, either to play or watch, adding an intergenerational aspect which resulted in many of the younger players being the most experienced.

The group used the Amtgard system, a loosely medieval based LARP which mirrored traditional TTRPGs in its character creation. Characters had different combat classes, ranging from magic casting wizards to axe-wielding barbarians, with accompanying armor and weapon restrictions by class. Class levels, which acted as a barrier to

powerful in-game abilities, were restricted by the amount of play sessions in which the given player had used a specific class, taking years to unlock the full play potential for each class. Players used and referred to each other by their character names during events and were given in-game benefits for wearing clothing appropriate to their class, and special prestige awards were given to those who created elaborate backstories and took on character personas, further encouraging roleplay. Play activities consisted primarily of combat-oriented sports, often with groups attacking or defending objectives, with foam-weapon combat happening in between. Those not directly involved in the physical aspect, or who were taking a break, worked on sewing, weapon construction, or art while observing the games from the sidelines.

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