

# Understanding Social Interaction and Relationships in and through Online Video Games

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## Summary

Video games, which have become the largest medium on the planet, serve as virtual third spaces where interpersonal relationships are extended, modified, or even formed and dissolved. Extant research has identified various affordances of massively multiplayer online games (MMOs, or MMOGs) that facilitate or hinder the development of interpersonal relationships. In-game elements, such as in-game groups (e.g., guilds, clans), communication features, and co-play, allow players to interact with others and may encourage self-disclosure and reciprocity, which are key to relationship building. This leads some players to develop and maintain long-term, deeper connections (i.e., strong ties) that would otherwise remain as loose connections (i.e., weak ties). In addition to game affordances and mechanics, scholars have been interested in how individual-level factors interact with in-game features in shaping gaming-related friendships and their effects. It has been shown, for example, that individual differences—such as demographics and motivations—as well as dyadic-level factors, such as the types of co-players, can produce meaningful differences.

In-game relationships can be both positive and negative for players and their surrounding networks. MMO players can acquire both bonding and bridging social capital, as well as enhance their well-being by satisfying relatedness needs. Emerging gaming technologies, such as augmented/virtual reality and game streaming, which enable novel forms of social interactions, confer similar benefits. However, concerns have been raised regarding the potential of online games displacing existing offline relationships and provoking identity-based conflicts based on out-group antagonism. To steer the gaming environment into a positive direction, gaming developers need to have a good set of values that help them build social architectures that foster connections and inclusive gaming environments.

**Keywords:** video games, MMOs, interpersonal relationships, affordances, social capital, displacement effect, out-group antagonism

**Subjects:** Communication and Technology

## Introduction

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Relationships are the foundation of human health and happiness. Without them, people atrophy. With them, they can flourish. The 75-year Grant and Glueck studies found that “good relationships keep us happier and healthier. Period” (Curtin, 2017, para. 6). This matters more than genetics or

money and has been shown to be tightly linked to physical and mental health (Buettner & Skemp, 2016; Mineo, 2017). So, understanding how and why people form and maintain friendships is directly tied to the quality—and quantity—of their lives. It makes sense, then, to continually ask how changes in the environment help or hinder relationships. Few things are more obviously changed and changing in this era than technology, and among technologies, video games are one of the largest. How large? Video games are the largest medium on the planet by far, with estimates ranging from \$250 billion per year (GlobalData, 2022a) to \$384 billion per year (Statista, 2023b) in revenues and with a speculated 3.1 billion regular players (Gilbert, 2023), or about 35% of the global population. For reference, the revenue figures are two to four times higher than both global television (Statista, 2023a) and the combined global film and music industries (Global View Research, 2022).

Increasingly, as technology and bandwidth have allowed players to play together more seamlessly across vast distances, video games have become sites of social interactions. They are media through which social ties are extended, altered, or even created and destroyed. As in everyday nongame contexts, it is important to establish a baseline understanding of why people form ties, the types that result, and what helps or hinders their formation. With that in place, the next step is to examine how connections differ once mediated through the wide spectrum of game genres, mechanics, platforms, and modalities. These many variations present a complication not typically found in research on media such as television or radio: Games are both more social in their designs and complex in their forms, making them much harder to study systematically.

This study's general theoretical framework echoes Mason and Carr (2022), who have adapted social penetration theory (Altman & Taylor, 1973) to modern contexts. Briefly, this approach presumes that relationships are based on people self-disclosing information and reciprocating, along with a need to consider the environmental context. Yau and Reich (2018) note that online spaces may be novel but that the core qualities and features of offline friendships persist. Mason and Carr suggest that this is a fundamental starting point and emphasize the importance of incorporating a nuanced understanding of technologies and media to inform it.

## Motivations and Needs

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Oldenburg (1989) first introduced the concept of “third places” to help make sense of people's social needs in structured, modern societies. While people's first place is home and their second place is work, he theorized and documented that all need a third place that fulfills a purely social function—a place where identity is not based on a role as a family member or worker. Oldenburg's classic settings were coffeeshops, bookshops, seedy bars, or anywhere that friends could meet and unshackle themselves from the constraints of titles and responsibilities to simply hang out and mix socially. The social “leveling” function of these places allowed people from different classes or other demographic categories to mix, banter, and exist as equals. Borrowing from that tradition, early research into the genre of massively multiplayer online games (MMOs, or MMOGs) found evidence of that same function taking place. The commonalities of a shared love of a genre and the meritocracy of game spaces are not dissimilar to a bowling alley or a pub trivia night. These spaces can attract people from a wide array of backgrounds, and their status outside those spaces is often

irrelevant. In a piquant note on meritocracy in early arcades, Herz (1997) noted, “It didn’t matter what you drove to the arcade. If you sucked at Asteroids, you just sucked” (p. 47). Using both quantitative and qualitative analyses, Steinkuehler and Williams (2006) noted that “by providing spaces for social interaction and relationships beyond the workplace and home, MMOs have the capacity to function as one form of a new ‘third place’ for informal sociability” (p. 885). Their forms matter in that not all games provide the affordances necessary for relationship formation or maintenance (more on this below). According to Ducheneaut, Moore, et al. (2007), “The sociable nature of these online spaces is often used to explain their success: unlike previous video games, MMOGs require players to exchange information and collaborate in real-time to progress in the game” (p. 129). As games have exited arcades, migrated to living rooms, ported to the Internet, jumped out on to mobile phones, and may yet evolve further into “real” augmented reality spaces through location-based games (Williams & Kim, 2019), it is important to ask whether these new sites feature Oldenburg’s criteria for good third spaces.

This perspective assumes that people are fulfilling a basic everyday need by socializing through games, whether they realize it or not. And indeed, relationship formation and maintenance have been identified as one of the main motivations for players’ engagement with video games ever since the inaugural scholarly publication on player typology and motivation. Bartle (1996) developed a typology of Multi-User Dungeon players and classified them into four quadrants—Socializers, Achievers, Explorers, and Killers—based on two dimensions of players’ playing style: action versus interaction and world-oriented versus player-oriented. Socializers interact with fellow players while Explorers interact with the virtual world; Achievers act on the virtual world while Killers act on other players. According to Bartle, Socializers exhibit a profound interest in human interaction, viewing the virtual environment merely as a backdrop that facilitates player encounters and engagements. The crux lies in interplayer relationships, with even the act of observing others playing being intrinsically rewarding. Explorers focus on the topics of discussion among players or to unlock additional social functionalities within the game. Instances of aggression, such as killing, are only justified when provoked or in response to someone causing harm to one’s friends. For Socializers, true fulfillment lies in fostering connections with others, developing an understanding of others, and cultivating enduring relationships.

Bartle’s original model has sparked fruitful discourse in numerous studies examining motivations for video game usage, with socialization emerging as a recurring theme. Yee (2006), for instance, expanded upon Bartle’s typology and employed statistical methodology to delve into player motivations, focusing specifically on MMOs. By conducting factor analysis on extensive surveys, Yee (2006) identified three overarching components that drive player motivations: achievement, social, and immersion. The social component in Yee’s model includes having an inclination toward helping and chatting with others, forming long-term meaningful relationships, and deriving satisfaction from collaborative teamwork. In a subsequent study, the motive of social interaction was the most influential predictor of players’ gaming duration based on an exploratory survey involving players of first-person shooter games (Jansz & Tanis, 2007). As the popularity of social network games (SNGs) burgeoned with the proliferation of social media, another survey revealed that social interaction, encompassing players’ motives to seek support from others and nurture positive relationships, accounted for approximately half of the variance in understanding why

players engage in SNGs (Lee et al., 2012). In the realm of serious games, such as educational games, Heeter's (2009) experimental study demonstrated that prosocial motivations contribute to learning and teaching through gaming experiences.

However, these frameworks primarily reflect the structure and content of specific game genres, rather than the fundamental underlying motives and satisfactions that may apply to players and game types more broadly. Therefore, an alternative line of research has adopted a theory-driven approach to understanding player motivations across various game genres, incorporating frameworks such as uses and gratification (U&G; Katz et al., 1973) and theories such as self-determination theory (SDT; Ryan & Deci, 2000). According to U&G, media audiences actively engage in consumption with specific goals in mind. Media usage is driven by social and psychological needs that individuals seek to fulfill through consumption, resulting in diverse patterns of media exposure, engagement, and subsequent gratifications. In the context of video games, Sherry et al. (2012) applied U&G and conducted focus groups to explore motivations for gameplay across different genres. They identified six dominant dimensions of player motivation: social interaction, arousal, challenge, competition, diversion, and fantasy. Players utilize media to fulfill their needs, aiming to maintain a state of equilibrium. SDT provides three universal psychological needs applicable to video games, which can predict players' engagement, enjoyment, and well-being: autonomy, competence, and relatedness. Relatedness is experienced when players feel connected with other players (La Guardia et al., 2000). Expanding upon SDT, the motivational model of video game engagement suggests that unlike activities driven by external rewards, video games appeal to players for intrinsic reasons that lie in the "inherent properties of the experiences they provide" (Przybylski et al., 2010, p. 155). Drawing on prior empirical research, including their own earlier studies, Przybylski et al. (2010) extended the SDT framework to theorize how video game environments can support basic psychological needs. In particular, they argued that games offering opportunities for online interaction and community engagement are more likely to satisfy players' need for relatedness. Based on both their findings and prior SDT-informed research (e.g., Ryan et al., 2006), the satisfaction of relatedness needs will in turn predict longer video game engagement, higher levels of enjoyment, and better psychological well-being derived from gameplay.

## Relationship Types and Networks in Games

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Network science offers helpful language and approaches for typologizing relationships and groups within games. This approach is particularly useful and usable because its requirements are well suited to the sorts of data that can be pulled out of games, sometimes with ease (sometimes not). The origin of network science comes from the study of organizations, where it was challenging to create the hub-and-spoke network graphs that the approach requires. It meant knowing every person in a system and re-creating all of their relationships from scratch, often using secondary records, interviews, or recall tasks. In contrast, video games come ready-made for this form of analysis, given that players and their interactions are often stored in formats that lend themselves to network graphs; friends lists, clan memberships, co-playing sessions, teams, and so on are all

direct ways to construct the “edges” of a network graph by showing who is connected to whom. Additionally, these graphs can be informed by the quality and quantity of the interactions, as well as by outcomes such as success, longevity, or even the breaking of the connections.

Thus, the kinds of relationships seen in games follow language familiar to network scientists: strong and weak ties, the number of ties, the centrality of a person, and, most basically, the number of people in a group or community. Qualitative approaches are heavily complementary, in that they provide color, context, and depth that network graphs often miss, revealing new phenomena and relationships that are not the primary focus of network science research (e.g., discovering that friendships exist through an out-of-game service like Discord).

Friendships in so-called “strong-tie” and “weak-tie” networks suggest a range of different outcomes and benefits and drawbacks (see social capital, below) but are often characterized by their level of depth and similarity. Often, but not always, a strong-tie network is composed of players who are similar in some demographic way, such as age, gender, or race (e.g., Zhang et al., 2019). They may also predate the game, as when friends or family join (or leave or migrate) a game together as a group. In parallel, a weak-tie network tends to be made of more temporary members who are less likely to be similar. Work using game data has shown that games often create flimsy, weak ties but that they can grow into more durable bonds over time, especially if the players are similar in their game progression, are in the same guild, or are geographically close—the latter owing as much to the potential for real-world connections as the compatibility of time zones (Shen, 2014; Shen et al., 2011). Network approaches to game communities, such as guilds and clans, have also led to discoveries of how different structures can predict the group’s longevity (Sun et al., 2021).

Interestingly, researchers using network approaches have also uncovered a version of Turkle’s (2012) “Alone Together” hypothesis within some games. Drawing on observations from therapy sessions, Turkle suggested that people often use technology to be near others but not interact with them. Using network data, Ducheneaut et al. (2006) found that many players enjoyed playing highly social games without actually playing with other players. In other words, the players appeared to want to be near others but not engage with them. This is notable, given that these players have many options for playing alone if that is what they actually prefer.

## The Effects of In-Game Relationships

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Video game scholars have demonstrated several positive effects of in-game friendships. One well-known outcome is the accumulation of social capital, which broadly refers to the benefits and resources that arise from social relationships (for an overview, see Adler & Kwon, 2002). Social capital is typically categorized into “bridging social capital” and “bonding social capital” (Putnam, 2000; Williams, 2006b). Bridging social capital contains the benefits and resources accrued through weak ties, such as having access to diverse information and broadening social horizons (Granovetter, 1973; Williams, 2006b). In contrast, bonding social capital pertains to the benefits and resources accumulated through strong ties, such as emotional and substantive support (Granovetter, 1973; Williams, 2006b). Although it appears that massively multiplayer online games (MMOGs, or MMOs) are generally well suited to the creation of bridging social capital, players can

also acquire bonding social capital by building long-term, deeper connections (Steinkuehler & Williams, 2006). While MMOGs have received significant attention, other game genres remain underexplored in terms of social capital. Given their rapid growth and widespread popularity, these genres present important opportunities for future research on the effects of in-game relationships and social capital.

In-game social capital acquisition has important real-world implications because it is known to spill over into offline domains, such as offline social capital and civic engagement (Molyneux et al., 2015), offline social support (Trepte et al., 2012), and psychological well-being (Depping et al., 2018). Furthermore, in-game friendships can enhance players' well-being. In a meta-analysis, Raith et al. (2021) found that there is an overall positive association between playing MMOs and social well-being, regardless of a player's age and/or gaming patterns. Research has shown that in-game friendships help players satisfy their relatedness needs—one of the basic psychological needs identified by self-determination theory—which, in turn, contributes to well-being (e.g., Liu, Choi, et al., 2024; Reer & Krämer, 2018). For example, in the context of first-person shooter clans, Reer and Krämer (2018) found that players' behaviors within clans, such as organizing and leading the group, meeting clan mates offline, and talking about personal issues, enhance well-being by fulfilling their relatedness needs. Even during the COVID-19 pandemic, a time bereft of in-person interactions, online games provided people with ample opportunities to socialize and stay connected with family and friends, which contributed positively to well-being (Barr & Copeland-Stewart, 2022). The positive effect of games on well-being is not limited to present social gaming. For instance, Wulf et al. (2020) showed that even memories of past social gaming experiences engender feelings of nostalgia through the fulfillment of relatedness needs in the past. This gaming-induced nostalgia was positively associated with three indicators of well-being: vitality, connectedness, and optimism. Aside from its effect on well-being, research has shown that the satisfaction of relatedness needs yields positive outcomes, such as enjoyment (Tamborini et al., 2010) and continued play (Ryan et al., 2006).

Emerging gaming technologies, such as augmented/virtual reality and game streaming, also contribute to well-being by providing players with a novel way to form and maintain social connections with others (Bowman et al., 2022). For example, *Pokémon Go*, one of the most successful location-based augmented reality games to date, combines several technologies, such as geomapping and the global positioning system, and encourages people to play with others in shared physical spaces (Vella et al., 2019). As such, it has the potential to “bring social games full circle by transposing the virtual ‘third spaces’ of MMO play . . . back into the real world” (Vella et al., 2019, p. 586). Similar to the experience of playing MMOs, research has repeatedly shown that playing *Pokémon Go* is positively associated with both physical and mental well-being (e.g., Wang, 2021; Yang & Liu, 2017), as well as social capital (e.g., Sung et al., 2017). During the COVID-19 pandemic, some location-based augmented reality games became more accessible for play at home, serving as a way to cope with emotional stress and sustain exercise (Ellis et al., 2020). Game streaming is another emerging gaming technology that enables novel forms of social interactions. It refers to the act of broadcasting gameplay to large audiences through various platforms, such as Twitch and YouTube Gaming (Bowman et al., 2022). It can be understood as public performance, characterized by varying degrees of interactions and synchrony between the streamer and the spectator (Lin et al.,



2019). Specifically, interaction can take many forms, ranging from one-way communication—where spectators passively watch without engaging with other viewers or players—to more active participation, such as interaction among spectators or direct engagement with the streamer. Moreover, studies have shown that friendship and social motivations in general—not just interaction with the streamer—drive individuals to consume these performances, contributing to greater subjective well-being (Kim & Kim, 2020).

While the creation and maintenance of in-game relationships can yield certain benefits, these connections may also cause negative effects on players and their surrounding networks, primarily through the displacement of offline relationships and the emergence of out-group antagonism. During the proliferation of television, Putnam (2000) postulated the renowned “Bowling Alone” hypothesis, suggesting a diminishing trend in offline social capital, face-to-face interaction, and civic engagement, all caused by the rise of television. This displacement approach, which argues that media experience displaces real-life interactions, was subsequently extrapolated to the Internet era by contending that the flourishing of Internet technology was detrimental to real-life relationships and community engagement (Nie & Erbring, 2002). Results regarding this matter were mixed, as the implications of an individual’s time online could fluctuate based on psychological variables and the medium employed (Shen & Williams, 2011; Williams, 2006a). Nevertheless, the displacement phenomenon received substantial empirical support. For instance, Williams (2006a), through a 1-month panel study of an immersive online video game, found that persistent engagement in video games resulted in a decline in both online and offline bonding and bridging social capital, despite an enhanced sense of connectedness and global perspective. Notably, Williams’s (2006a) study identified sharp reductions in face-to-face interactions with friends, suggesting a “cocooning effect” wherein players became more socially isolated from their extended friendship networks. Additionally, Tham et al. (2020) demonstrated that in-game social support failed to provide the same mental health advantages as real-world social support and was positively correlated with problematic gaming. Tham et al. adopted a continuous conceptualization of problematic gaming—emphasizing that certain patterns of use may not meet clinical diagnostic thresholds but can still be cause for concern. These behaviors include spending more time gaming than initially intended, experiencing restlessness or distress when prevented from playing, and neglecting partners, family members, or friends due to gameplay.

Furthermore, gameplay often induced an amplification effect, or the “rich get richer” phenomenon (Kraut et al., 2002), where sociable players were more inclined to participate in groups, while less gregarious players generally preferred solo gaming. It appears that gaming amplified preexisting social interaction patterns rather than rectifying them. Paradoxically, while socially inclined players’ online bonding social capital improved, their offline social capital diminished (Williams, 2006a). As individuals placed more importance on their in-game social networks at the expense of preexisting relationships, their group cohesion heightened, but so did their out-group antagonism. This out-group antagonism has provoked numerous identity-based conflicts in video games, initiating studies examining the relationship between gaming and right-wing extremism, encompassing issues such as racism, misogyny, and antisemitism (Wells et al., 2024).

For instance, research has highlighted the gendered nature of video games, esports, and streaming platforms. These domains exhibit distinct gendered characteristics, such as being predominantly framed as “boys’ activities,” a noticeable lack of female representation, genre preferences influenced by gender biases, gender-specific patterns in gameplay and social interactions, and gendered perceptions and usage of these platforms (Thornham, 2008). Women and other gender minorities who are discouraged from participating in gaming spaces, often due to gendered norms or experiences of harassment (Fox & Tang, 2017), may be excluded from key opportunities for relationship development that these platforms afford, leading to qualitatively different social experiences compared to their male counterparts. While online games offer players increased opportunities to explore and adopt different gender roles, potentially facilitating a deeper understanding of cross-gender experiences (Lin et al., 2006), research consistently indicates that women tend to underperform in male-stereotyped domains when in mixed-gender conditions compared to women-only conditions (e.g., Kaye & Pennington, 2016; Nolla et al., 2023). One potential explanation for this phenomenon is that mixed-gender groups provide an environment for cross-gender interpersonal interactions, which can inadvertently communicate stereotypes from men to women. Even subtle forms of discrimination can create stereotype threat, leading to lower performance among women (Spencer et al., 2016). Consequently, women in mixed-gender teams often experience reduced engagement and contribute to the perpetuation of gendered inequalities, particularly in male-dominated domains like esports. Conversely, women playing in women-only teams tend to exhibit better performance as they are not directly exposed to stereotypical threats, allowing them to avoid disengaging for self-protection (Nolla et al., 2023). Therefore, despite the potential for cross-gender co-play and social interactions facilitated by online multiplayer games, research suggests that these spaces often reinforce out-group antagonism rather than challenge it, contributing to the division between male-identified players and other participants (Tomkinson & Harper, 2015).

### Barriers to In-Game Relationships

Certain features of online video games—most notably, the potential for player anonymity, which often reduces accountability (Liu, Sun, et al., 2024), and the absence of nonverbal cues in non-collocated contexts—can hinder the development of relationships within these virtual “third places.” Anonymity, for instance, can increase the likelihood of disruptive behavior, making these spaces less welcoming or inclusive. Additionally, the lack of face-to-face communication may hinder relationship building and maintenance (e.g., Barnett & Coulson, 2010; Rabby & Walther, 2003). These challenges are often intensified by toxic gaming cultures and exclusionary norms, which disproportionately affect minority and underrepresented players (Kordyaka et al., 2020).

Social identity theory (SIT; Tajfel & Turner, 2004) is one of the perspectives that sheds light on understanding these barriers. According to SIT, an individual’s identity consists of personal aspects, such as traits and characteristics, as well as social aspects, such as group memberships and social roles. These social group affiliations play a significant role in shaping individuals’ self-concept and influencing how they evaluate themselves. To maintain a positive self-concept, individuals are motivated to display favoritism toward their in-group while denigrating out-groups. This tendency tends to be more pronounced among individuals who are deeply committed to a particular group.



Self-categorization theory (SCT; Turner et al., 1987) further expands on these ideas by highlighting that when social cues related to group membership are salient, individuals are more likely to categorize themselves and others at a group level. This process accentuates intergroup antagonism, leading to biased perceptions and behaviors. In the context of online multiplayer video games, the social identity model of deindividuation effects (SIDE; Reicher et al., 1995; Spears & Lea, 1992; Vilanova et al., 2017) suggests that computer-mediated interactions often lack personal information and nonverbal cues, leading to a sense of depersonalization. This depersonalization, in turn, facilitates the tendency to categorize oneself and others at a group level, relying on stereotypes (Bergstrom et al., 2016) and promoting intergroup bias (Guegan et al., 2015).

Although theories like SIT, SCT, and SIDE are grounded in intergroup dynamics, they offer valuable insights into interpersonal relationship processes in online games. This is because social impressions and behaviors often emerge from the integration of multiple types of information, rather than from a single cue, like group membership (Kunda & Thagard, 1996; Smith & Overwalle, 2013). This perspective challenges the traditional assumption in intergroup research that stereotypes or prejudice are solely driven by categorical distinctions (Mackie & Smith, 1998).

Even in high-conflict situations, such as warfare, individuals may respond to others based on personal characteristics rather than purely on group affiliation (Mackie & Smith, 1998). For example, one might distrust an in-group member or admire an out-group individual depending on their actions or traits. In lower-stakes environments, such as online multiplayer games, this integration of group-based and individual-level information is even more common.

Experimental evidence supports this complexity: Individuals highly identified with a group may favor others differently depending on context—preferring likable or relatable individuals in interpersonal settings, but favoring those who perform well in intergroup contexts (Schmitt et al., 2000). This suggests that group identity shapes but does not entirely determine interpersonal evaluations. In the gaming context, shared group identity—such as being part of the same guild or faction—can promote trust and cooperation, serving as a foundation for relationship development. However, these same dynamics can also create barriers to cross-group relationships, as intergroup bias and antagonism may limit interaction with perceived out-group members. For example, studies of *World of Warcraft* and *Dofus* players show that intergroup conflict often arises from minimal categorizations and that players rate their own guilds more favorably than others, particularly in in-game contexts where group salience is higher (Guegan et al., 2015; Redig, 2010). Thus, group identity in games is best understood as a relational scaffold: It can enable interpersonal connection but also constrain it, depending on the broader social dynamics at play.

A potential strategy to address this barrier is through cross-categorization, where individuals categorize themselves and others based on multiple dimensions (Roccas & Brewer, 2002). Research focused on *World of Warcraft* has demonstrated that out-group antagonism and intergroup bias decreased when players possessed multiple avatars belonging to the opposing faction, indicating the importance of adopting multiple crossed social identities. Thus, it is suggested that the game industry should encourage players to utilize avatars from the out-group and assume multiple crossed social identities within the gaming environment (Mancini et al., 2018).

Additionally, apart from team-based in-group/out-group categorization, individuals also engage in gender-based group categorization. While gaming toxicity and performance pressure are experienced by players of all genders as barriers to forming and maintaining connections, female players, unlike their male counterparts, frequently report being targeted by misogyny. Female players also display a heightened awareness of the potential negative consequences of underperforming due to stereotype threat. While all players experience anxiety about their skills, female players consciously recognize that their gender may be attributed to any poor performance, leading to heightened vigilance and a sense of insecurity within the gaming environment (Vella et al., 2020). Consequently, female players may withdraw from opportunities to build new trusting connections, which can adversely affect their performance and limit their social interactions to varying degrees. To navigate hostile gaming environments, female players often resort to coping strategies such as playing as male characters, carefully selecting screen names, and avoiding voice chat (Cote, 2017). However, these limitations on communication channels hinder the formation of new relationships for female players and diminish the potential for bridging social capital (Meng et al., 2015). To address this barrier, research suggests implementing a “buddy system” to foster friendships among female players, particularly by pairing them with skilled and visible female mentors. Such an approach aims to create a more inclusive gaming environment for women and provide greater opportunities for social connections (Vella et al., 2020).

## Predictors of Relationships in Games

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Drawing again on Mason and Carr (2022), if self-disclosure and reciprocity are the keys to building relationships, what are the variables in games that lead to more or fewer of those actions? These variables can be broadly categorized into contextual factors related to the environment—especially in-game groups, communication features, and co-play—as well as individual-level factors, including both individual differences and dyadic variables.

## Affordances

Affordance theory (Gibson, 1979) asks what the environment offers the user and prompts people to consider that various games will have differences that may, in turn, impact social interaction and relationships differently. Consider the affordances of *Pokémon Go*: Players play together or in groups, and they can use their mobile phones to “see” augmented reality creatures in real space. Both of these affordances have relationship implications in that they will incentivize players to play together and to play in person rather than remotely. Another *Pokémon* title played on a console might have very different relationship outcomes, even if the game is fairly similar.

Because games are the product of computer code, their affordances are necessarily the result of coders’ choices. Code itself has no value set, but it is anything but neutral. What a game developer codes literally dictates what a player can or cannot do, giving rise to Lessig’s (1999) maxim that “Code is law.” This law includes whether players can, for example, talk to one another. It also includes what are known to developers as the “mechanics” of the space (Sellers, 2006). A mechanic is the most basic form of possibility in a game space. In chess, the fact that a bishop can move

diagonally is a mechanic. In games, possible mechanics are nearly infinite, ranging from a player's ability to move, to their powers, to whether players are on the same team in a multiplayer game, whether they are adversaries, whether interactions occur in service of tasks (Kaye, 2021), and so on. Their affordances can be positive or negative for relationships. The designer Jane McGonigal (2011) sees game mechanics as tools for optimizing happiness for individuals and for "collaborative communities" (p. 14), while Lessig notes that these same affordances can be used for social control rather than community building. This complexity is both a reason why games are often much more social than other media and a factor that makes them much more complicated to study systematically.

A list of these affordances and mechanics is well out of the scope of this article, but nearly every study of video game uses or effects relies at least implicitly on controlling for or acknowledging some affordance, whether it is communication modality (e.g., Xiao et al., 2023), a game mechanic (e.g., Sújar et al., 2022), or common features within a genre (e.g., Szolin et al., 2022). Kaye (2021) suggests that the key axes of affordances for understanding relationships are the levels of presence and whether players are interdependent.

Some of these system-level effects are measurable through the toolset of Social Value (Williams et al., 2023), an algorithm that measures each player's impact on other players in terms of hours played. By aggregating individuals' measures into community totals, researchers can determine what percentage of a community's overall time played is driven by the other players and what is not. In early measures using this approach, Williams (2018) has found that the percentage appears to be driven by these same affordances and mechanics. The Social Value rate of overall behavior is 6% for simple mobile single-player titles, 30% for PC-based multiplayer games, and 60% for massively multiplayer online games (MMOs, or MMOGs). While it is impossible to know if social players gravitate toward more social architectures or if the architectures drive social behaviors, it is telling that the mechanics and affordances of the games with the higher percentages are the ones that would be expected to correlate with stronger communities. Games where players play together generate higher community rates, while games that additionally feature strong affordances for interdependence and long-term associations have still higher rates.

### In-Game Groups

Online games, particularly MMOGs, provide players with opportunities to create those longer-term associations through organizations such as clans and guilds. In-game social organizations play a pivotal role in the social experiences of MMOs (Williams et al., 2007). They are often formed around like-minded players based on mutual interests (Williams et al., 2007) and evolve through the process of "formation, development, membership loss, and breakup" (Chen et al., 2008, p. 300). Thus, game worlds can be understood as ecosystems consisting of evolving guilds where players serve as important resources for their life cycles (Chen et al., 2008). Although online gaming communities share commonalities, they differ in various aspects such as goals (social, player-versus-player, raid, and role-play), size (small, medium, and large), formal practices (e.g., website, recruitment and expulsion policies, mission statements), churn, and leadership style (Williams et al., 2006). Also, some structural properties of these communities, such as size, are known to affect their survival and growth (Ducheneaut, Yee, et al., 2007). Studies have shown that players who join

in-game social organizations gain positive social outcomes. Steinkuehler and Williams (2006) found that players who form and develop close ties in guilds are more likely to gain bonding social capital (e.g., emotional or substantive support) than those who miss out on such communal experiences. Similarly, Williams et al. (2006) reported that bonding social capital is strongest in small guilds within the context of *World of Warcraft*. Another study by Reer and Krämer (2014) examined how players' behaviors within clans/guilds lead to social capital acquisition. The results showed that participating in clan/guild-related offline events, frequently playing together with a clan/guildmate, and engaging in clan/guild administrative tasks are positively associated with self-disclosure and communication frequency, which together contribute to the accumulation of bridging (e.g., broadening worldviews) and bonding social capital.

### Communication Features

Communication features are critical in supporting social interaction among players (Consalvo, 2011; Paavilainen et al., 2017). Players use both in-game communication features and third-party applications such as Discord and Skype for communication (Freeman & Wohn, 2017). Players' conversation extends beyond task-oriented ones, including politics, culture, and personal issues (Steinkuehler & Williams, 2006). Peña and Hancock (2006) showed that players produce more relational (i.e., socioemotional) messages than task-oriented messages, suggesting that people actively develop interpersonal relationships in online games. During such interaction, players often engage in self-disclosure, which has a mutually reinforcing relationship with trust building (Ratan et al., 2010). Scholars have shown that social interaction and relationships in games vary depending on which communication channels are used and how they are being used. Research focused on the modality of communication has found that the use of voice chat in MMOGs is more effective in forming relationships and building trust among guildmates than the use of text chat (Ratan et al., 2010; Williams et al., 2007). However, a study of the popular game co-viewing and chat platform Twitch found that friendships were formed through self-disclosure (Sheng & Kairam, 2020). Instead of focusing on a specific communication modality, some scholars showed that the number of channels used for social interaction matters (Freeman & Wohn, 2017; Meng et al., 2015), suggesting players gain social capital and support through multimodal connectedness. Another line of research examined the role of message privacy. Sending public messages may represent players' willingness to solidify trust with larger groups, such as guilds, whereas sending private messages may represent their willingness to strengthen trust with selected individual players (Ratan et al., 2010). Among those who use directed, private messaging, Choi et al. (2023) found that both receiving and sending messages are positively associated with perceived bonding social capital, while receiving messages serve as a stronger predictor.

### Co-Play

The inclusion of social play is another characteristic that encourages in-game social interactions and potentially enhances players' sense of relatedness. For instance, in an experimental study conducted by Tamborini et al. (2010), the researchers manipulated whether individuals engaged in video games with human counterparts (co-playing) or computer-controlled counterparts (solo

playing) to investigate the impact of social play on players' perceived relatedness. The findings revealed that participants in the co-playing condition reported significantly higher levels of relatedness compared to those in the solo-playing condition. Similarly, drawing upon play theory, Kim et al. (2022) conceptualized group play as an in-game affordance that promotes reciprocal behavior among players. By utilizing players' natural behavioral data and self-reported social capital, Kim et al. (2022) demonstrated that group players are more likely to engage in reciprocal behavior than solo players, and they tend to possess higher social status and social capital. These game features that foster social play contribute to the formation of relationships, while the gratifying experience of social play may, in turn, positively reinforce players' maintenance of relationships.

In addition to enabling remote connectedness, video games also foster opportunities for collocated social interaction, where individuals engage in synchronous play in the same physical space. Collocated co-play facilitates real-time communication, shared experiences, and richer nonverbal interaction, all of which may contribute to greater enjoyment and deeper social bonding. Scholars have argued that digital systems should not merely support such interactions but actively enhance the quality and depth of in-person engagement (Olsson et al., 2020). In this vein, Gajadhar et al. (2008) found that collocated co-play—compared to online or mediated gameplay—significantly increases enjoyment, perceived challenge, and players' sense of competence.

Emerging technologies, such as multiplayer gaming consoles and collaborative touch displays (Olsson et al., 2020), offer new avenues for enriching the social dimensions of collocated gaming, particularly across different stages of relationship development. For instance, multiplayer mobile games have been shown to facilitate icebreaking in small groups, helping to ease early-stage interaction (Jarusriboonchai et al., 2016). Location-based games like *Pokémon Go* can prompt spontaneous encounters in public spaces, where game design elements encourage interaction during idle moments, creating opportunities for players to exchange information and engage socially (Paasovaara et al., 2017). At the relationship maintenance stage, more physically embodied games such as *Music Embrace* (Huggard et al., 2013), which requires two players to coordinate movement using a shared pillow controller, can facilitate ongoing social interactions and enrich the means of social interaction.

### Individual-Level Factors

In Yee's (2006) survey assessing player motivation, both male and female players demonstrated a shared appreciation for the social aspect of video games, although they sought distinct elements within those relationships. While male players engaged in socialization activities such as casual conversations, assisting others, and establishing friendships, similar to their female counterparts, female participants exhibited significantly higher levels of motivation in terms of long-term relationship formation, nurturing meaningful connections, self-disclosure, and providing and receiving support (Yee, 2006). Furthermore, scholars specializing in feminine perspectives have highlighted that portraying female players as a homogeneous group fails to acknowledge their remarkable diversity (Taylor, 2003). Female players adopt various playing styles that are influenced by their social context, demographic background, and personality traits (Taylor, 2008).

Aligning with this line of inquiry, Poels et al. (2012) found that gender identity, which reflects the extent to which an individual identifies with traditionally masculine or feminine characteristics, can predict playing patterns and social motivations among individuals who identify as female players. The findings of Poels et al. (2012) revealed that women's gaming preferences extend beyond the mere appeal of social opportunities in virtual worlds. Women displaying higher levels of both masculinity and femininity exhibited heightened social motivation. Specifically, in accordance with Yee's (2006) findings, masculinity predicted improved socializing and teamwork, but not relationship formation and maintenance, whereas femininity demonstrated a positive correlation with all three components.

Collectively, research examining the association between gender, gender identity, and social motivation indicates that both masculinity and femininity are linked to the need for a sense of belonging. However, masculinity is primarily associated with group affiliation, while femininity is more closely associated with relational bonds. This line of research also underscores the importance of considering gender in conjunction with other individual differences, such as age and personality, to understand how personal factors contribute to differences in relationship formation and maintenance within the realm of video games.

In addition to gender and gender identity, age is another factor that predicts how individuals engage with and perceive social interactions in video games. For example, under the framework of socioemotional selectivity theory (Carstensen, 1992; Carstensen et al., 2003) and self-determination theory (Deci & Ryan, 2000), Liu, Choi, et al. (2024) showed that older players tended to make fewer in-game friendships than younger players, yet they reported the same level of perceived relatedness as younger players. This might be because, as individuals get older, they perceive more constraints in life and thus will prioritize relationship quality over quantity and maximize emotional gains.

Consistent with this result, another study focusing on the embeddedness of social online gamers found that younger participants tend to have more friends, both online and offline, and are more likely to play online games with offline friends (Domahidi et al., 2014). In line with these results, interviews from older adults playing *Wii Bowling* showed that they viewed gaming as a fun way to take a break and interact with others, with some of these interactions potentially continuing outside of the game (Hausknecht et al., 2015). Moreover, the interactions also extended to other older adults who came to watch the team play. Outside of the game, older adults may also discuss the game with family and friends, and the game can become a point of conversation with their grandchildren, helping enhance intergenerational relationships and social connections in real life. Despite the potential benefits from social interactions for older players, researchers have argued that it is important to take the social context of players into consideration. Video games are not always socially accepted by older players, which may make older players more likely to be solo players or reluctant to participate in academic studies on gaming and thus are less represented (De Schutter & Malliet, 2014).

Players' motivations are also pivotal in forecasting their relationship initiation, maintenance, and enhancement behaviors in games. For example, by interviewing Facebook users, Wohn et al. (2011) identified interpersonal factors as the primary motivation that propels individuals to play social network games. Notably, relationship initiation was often driven by game-related objectives,

leveraging neighbors' assistance to advance one's game level. Additionally, the expansion of one's social circle is facilitated through the interconnectedness of "friends of friends," wherein shared interests outside of the game serve as the foundation for creating new connections. Furthermore, co-play serves as a mechanism for maintaining existing friendships, particularly with distant friends or family members. The finding has also been replicated in another empirical study where researchers surveyed younger and older players and found that maintaining connections was the most important motivation for playing with other family members (Osmanovic & Pecchioni, 2016).

While there is extensive research on personal factors that predict social behaviors in video games, most studies have primarily focused on demographic factors and motivations, with little attention given to other individual differences, such as personality and other trait-related factors. One exception is a study examining the formation of gaming-related friendships among individuals with heightened emotional sensitivity (Kowert et al., 2014). Emotional sensitivity refers to the capacity to interpret nonverbal and emotional cues within communication (Riggio & Carney, 1989). It plays a crucial role in understanding social interactions, although elevated levels of emotional sensitivity can indicate hypersensitivity (Riggio, 1987). Kowert et al. (2014) discovered that individuals with high emotional sensitivity exhibit distinct patterns of online gaming behavior compared to their counterparts. They tend to utilize online spaces as a means to expand their social networks, likely because individuals with heightened emotional sensitivity often experience shyness in establishing friendships in real-life settings. Online gaming platforms provide a crucial avenue for them to connect with new social contacts, thereby integrating these relationships into their offline lives. This line of research illuminates the unique advantages offered by online video games, which can provide individuals with diverse personal characteristics the social opportunities they require to complement their offline experiences, while concurrently facilitating the creation, maintenance, and enhancement of relationships.

At the dyadic level, by surveying players of an online multiplayer first-person shooter game, Perry et al. (2018) have found that playing in different types of relationships—namely, online-only friends, real-life friends, and strangers—had a substantial yet distinct association with social capital, an outcome of relationship-building and maintenance practices. Specifically, playing with online-only friends was associated with greater bonding and bridging social capital, while playing with real-life friends was associated with higher bonding and unrelated to bridging. Playing with strangers showed a positive relationship with bridging and a negative relationship with bonding. The connection between co-playing with others and social capital was indirectly mediated by promoting a harmonious engagement with the game, meaning that the gaming activity complements other important activities and goals in one's life (Vallerand et al., 2003). However, playing with online-only friends was associated with not only harmonious play but also obsessive play, indicating that online-only friends are a relatively heterogeneous form of gaming relationships, constituting both close and distant social ties, as well as interactions with both casual and hardcore players. Such diversity may account for their potential to foster either harmonious or obsessive involvement in gameplay. While harmonious engagement was associated with social capital, obsessive engagement was not.



Despite players enjoying playing with friends, an interview of Multiplayer Online Battle Arena players indicated that playing with friends is often not a viable option due to the difficulty of match times and skill levels (Tyack et al., 2016). Therefore, players have to play with strangers, although when playing with strangers, players reported a more conservative play style to avoid harassment or criticism, as well as anticipating less teamwork and social interaction. Relationships with strangers in gaming contexts are often perceived by players as task-oriented unless one party initiates social interaction (Tyack et al., 2016).

## Conclusion and Future Directions

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Relationships are the bedrock of quality of life. As mediated interactions have become indispensable with the help of communication technology, it is crucial to have a nuanced understanding of how social interactions and relationships unfold in virtual spaces. Among various media, it has been noted that online games serve as important third places for informal sociability (Steinkuehler & Williams, 2006). The historic disruptions and isolation caused by the COVID-19 pandemic have brought games to the forefront of attention among communication scholars once again due to their potential to provide people with alternative ways to stay connected with others and sustain their well-being (e.g., Barr & Copeland-Stewart, 2022; Ellis et al., 2020). With this context in mind, the purpose of this article has been to offer a comprehensive review of the motivations behind in-game social interactions, the various types of relationships that emerge through games, and the predictors as well as consequences of in-game friendships.

Much of the literature has focused on one now-small form of gaming, the massively multiplayer online games (MMOs, or MMOGs). Social interactions in these games may be a double-edged sword for players. On the positive side, in-game social connections confer substantial benefits to players, such as access to diverse information and emotional support, which translate into real-world outcomes (Molyneux et al., 2015; Trepte et al., 2012). In-game social interactions can even enhance players' well-being by fulfilling the basic needs for relatedness (Liu, Choi, et al., 2024; Reer & Krämer, 2018). Despite their benefits, online games are often blamed for their potential to displace offline relationships (Williams, 2006a) and instigate identity-based conflicts based on out-group antagonism (Wells et al., 2024). For online games that aspire to serve as third places, engineers and developers may benefit from understanding what facilitates or impedes social interactions and from thoughtfully coding a set of values into the gaming experiences that help bring players together. Likewise, a heightened awareness of these social architectures and the embedded values is a key form of media literacy for the players themselves (Williams & Kim, 2019). Identifying various elements of MMOs that afford social interactions, such as in-game groups, communication features, and the inclusion of social play and interdependent mechanics, might be a good starting point. Also, future research could empirically test whether the implementations of various systems help overcome the barriers and challenges associated with in-game relationship building. For example, one could test if mentoring/buddy programs (Vella et al., 2020) or other novel technologies such as deepfake voices (Simonite, 2021) contribute to a more inclusive gaming environment by empowering underrepresented groups and/or building positive intergroup relationships—or not.

Empirically, MMOs are now a small slice of global gaming, and future research needs to extend its scope to other platforms and genres. Nowhere is this more important than with mobile games. Mobile games now account for more than half of the global game market (GlobalData, 2022b), yet they have received relatively little scholarly attention compared to PC-based multiplayer games and MMOs. This imbalance may, in part, reflect researchers' personal preferences, but it is time to study where the players actually are. Given the limited existing research, conclusions about the nature of relationships formed and maintained on other platforms remain speculative. It is reasonable to anticipate that fewer interdependent mechanics, fewer social support systems, and shorter-lived game sessions and ties would result in fewer long-term and strong relationships, but this is a broad guess in a highly varied and nuanced space. Exceptions are likely to abound. But presumably, relationships in traditional mobile games (as opposed to mobile location-based games) may be generally thinner than those in MMOs. However, there are still plenty of connections in mobile gaming, as evidenced by research that examined the role of mobile user interfaces and mobile game affordances (Yang & Gong, 2021), as well as players' social play habits in mobile multiplayer games (Li & Suh, 2021) in facilitating in-game connections and sustaining engagement. Virtual/augmented reality games are another exciting area of research that merits continued consideration among communication scholars. Location-based augmented reality games, in particular, may be regarded as a game changer that could function as third places similar to MMOs (Williams & Kim, 2019), blurring the line between virtual and physical third places. The affordances of augmented reality are fundamentally more social and community-focused compared to virtual reality (Williams, 2016). As the mechanics and affordances of games differ across genres and platforms, it is important for game scholars to probe whether and how the antecedents, processes, and outcomes of in-game friendships in MMO contexts apply in other emerging contexts.

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