



Channels matter: Multimodal connectedness, types of co-players and social capital for Multiplayer Online Battle Arena gamers



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ABSTRACT

The study aimed to examine the roles and interactions of (1) multimodal connectedness and (2) three types of co-player networks in online gamers' social capital acquisition. Over 17,000 players of the popular game *League of Legends* were surveyed on their playing partners, the media channels used, and social capital. Combined with behavioral data from server logs, the results showed that multimodal connectedness (i.e., the number of communication channels used for social interaction among players) was positively associated with one's bridging and bonding social capital. The frequency of playing with an existing offline friend was positively associated with one's bridging and bonding social capital; the frequency of playing with an online friend first met in the game was positively associated with one's bridging social capital; the frequency of playing with a family member was not a significant predictor of one's social capital outcomes. Moreover, multimodal connectedness magnified the positive relationships found between social capital outcomes and playing with online and offline friends.

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1. Introduction

The rapid growth of the Internet has made the world a global networked society (Castells, 2000), and created new forms of sociability to facilitate both online and offline interactions (Katz & Rice, 2002). Online games have emerged as a new space where people can interact with one another, often bridging the offline context with the online one. In recent years, a growing body of research has examined social aspects of online games such as World of Warcraft (WOW), EverQuest, or the virtual world of Second Life (Cole & Griffiths, 2007; Guitton, 2012a,b, 2015; Williams, Yee, & Caplan, 2008). Following the tradition of research on impacts of Internet usage (e.g., Kraut et al., 1998, 2002), the present study aims to examine social effects of playing online games, with a particular interest in the accumulation of social capital.

Although quite a few studies have investigated social capital outcomes of online gamers (Steinkuehler & Williams, 2006; Williams et al., 2006; Zhong, 2011), these have several limitations. First, it is nearly definitional in communication research that the medium should matter (McLuhan, 1995), yet very few studies so far treat games as various ways people communicate through the game (Guitton, 2012b, 2015). Online games often integrate media modalities (e.g., text, voice, image, etc.) so that players are able to

interact with one another through multiple communication channels. It is important to understand if and what extent online game players use a spectrum of communication channels for social interaction (Rice, 1992). This paper introduces the concept of multimodal connectedness among online gamers and examines its relation with players' social capital.

Second, previous research has less often explicitly investigated and compared the effects of playing with different relational categories of co-players. It is not until recently that game researchers have begun to consider play partners as a central part of an integrated gaming experience (Shen & Chen, 2015; Shen & Williams, 2011; Waddell & Peng, 2014). Pew research has shown that 47% of teens play online games with people they know in their offline lives (Lenhart, Jones, & Macgill, 2008); A study of over 5000 *EverQuest II* players found that 69% played the game with their friends or families (Shen & Williams, 2011). As co-play is a significant phenomenon in online games (Zhong, 2011), it becomes essential to understand and compare social capital outcomes of playing with different types of relational partners. This paper borrows the concept of tie strength and examines social capital acquisition of playing with three types of relational partners: family members, pre-existing offline friends, and online friends meet for the first time in the game.

Moreover, the current study is situated in an emerging genre of online games, the so-called Multiplayer Online Battle Arena

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(MOBA), which has experienced a rapid rise in popularity over the past five years (Pereira, 2014). MOBA is an eSports (Kain, 2014), and it is characterized by competition between two teams of players. Even though this genre shares important features with MMOGs, such as 3D representation and multiplayer interacting online, MOBAs are distinct in their game mechanisms in several aspects. It will be worthwhile to examine if this genre leads to different social capital processes and outcomes. The findings will contribute to the literature on online gaming and social capital in general.

2. Conceptual framework, hypotheses and research questions

2.1. Social capital and online games

Social capital is a theoretical framework that traces back to the work of Bourdieu (1985) and Coleman (1988), with further extension by Burt (1992), Putnam (2000) and Lin (2001). Each theorist defined social capital somewhat differently (see Adler & Kwon, 2002). The present study will employ the definition widely used in research on online gaming and social media. Social capital is broadly defined as the benefits (e.g., informational and support-based resources) obtained through the social relationships in which one is embedded (Ellison, Steinfield, & Lampe, 2007; Reer & Kramer, 2014; Shen & Cage, 2013). Online gaming researchers often refer to Putnam's delineation of two basic forms of social capital: bridging and bonding (Reer & Kramer, 2014; Williams, 2006a). Bridging social capital comprises weak ties wherein individuals from different backgrounds exchange diverse information, open up opportunities for new resources and broaden social horizons (Williams, 2006a). Bonding social capital comprises strong ties wherein a tightly knit group such as families and close friends share intimacy and provide emotional and substantive support over a longer period of time (Williams, 2006a).

Since the appearance of Putnam's (2000) pessimistic view on mass media and degrading social capital in the United States, a series of projects have found mixed results with respect to the Internet's effects on people's social relationship development and maintenance (e.g., Kraut et al., 1998; Kraut et al., 2002; Wellman, Haase, Witte, & Hampton, 2001). The inconsistent findings called for more scholarly attention to specific services that people use on the Internet (Steinkuehler & Williams, 2006), as some services are social and conducive to social capital acquisition (e.g., chat rooms, virtual communities) (Guitton, 2015), and others are not (e.g., video streaming, online shopping). Similar to specific services such as social network sites (Ellison et al., 2007), online games have been examined in relation to socialization and social capital outcomes (Guitton, 2012a,b; Williams, 2006a).

Several studies found positive effects of playing online games on bridging social capital. For example, MMOGs provided a virtual place where a range of social interactions could occur (Steinkuehler & Williams, 2006). Playing MMOGs facilitated bridging social capital by providing more opportunities to develop new friendships, expand network diversity and nurture a sense of global community (Kobayashi, 2010; Williams, 2006a). However, findings diverge on the impact on bonding social capital. Early studies on MMOGs reported that building up strong relationships among players was possible but very rare (Williams et al., 2006). More recent studies showed that playing MMOGs either positively (Skoric & Kwan, 2011) or negatively predicted bonding social capital (Zhong, 2011). The mixed findings may be partially explained and resolved by filling two gaps in the literature. First, players' social capital outcomes may vary depending on the extent to which they use multiple media to communicate with one another (Chan, 2014). However, research often focuses on the impacts of the game itself rather than the ways people use the game as a true medium for communication. Online games can be considered as

additional communication channels in players' daily personal communication systems. Players have greater chances to develop new relationships and strengthen their existing relationships if more media are employed for social interaction (Wellman et al., 2001).

Second, players' social capital outcomes may vary depending on different types of co-players. Although co-play with others positively predicted bridging and bonding social capital (Treppe, Reinecke, & Juechems, 2012; Zhong, 2011), fewer studies explicitly examined the relations between different types of co-players and social capital outcomes. A couple of recent studies found that playing with pre-existing ties reduced players' levels of loneliness (Shen & Williams, 2011), and examined co-play patterns in relation to players' network sizes (Shen & Chen, 2015). This paper will directly examine different social capital outcomes based on specific relational categories of co-players.

2.2. Multimodal connectedness and social capital

Game researchers have found that the development and maintenance of social relationships among players vary by in-game media use. For example, guildmates who used voice chat had higher levels of relationship strength and trusted one another more than guildmates who used text chat (Ratan, Chung, Shen, Williams, & Poole, 2010; Williams, Caplan, & Xiong, 2007). While these studies are valuable and informative, they typically focus on the effects of a single communication channel. In reality, most online games such as MOBAs and MMOGs provide and are embedded in multimodal communication environments. That is to say, an individual player has a personal communication system composed of a variety of communication channels to interact with other players (Boase, 2008). Multimodal connectedness, defined as "the various modalities through which people maintain their connections with each other" (Schroeder, 2010, p. 79), manifests the fact that individual players have a repertoire of communication channels (i.e., text, voice, images, etc.) for social interaction. The present study does not examine the effect of any specific communication modality. Instead, it focuses on the effect of multimodal connectedness (i.e., the number of communication channels a player uses to communicate with other players) on social capital.

Without using multiple communication channels, individuals' social capital acquisition can be very limited in online games. According to media niche theory (Dimmick, Kline, & Stafford, 2000), each communication channel has its own niche to meet the gratifications of communication actors (Dimmick et al., 2000). As multimodal connectedness increases, more gratification niches will be fulfilled and created, thereby leading to more means and opportunities for communication. For example, in-game text chat may serve to initiate new connections among players. However, given the lack of cues in computer-mediated text communication (Culnan & Markus, 1987), diverse information may be rarely exchanged or the horizons may be rarely broadened during the relatively short and intensive game sessions in MOBAs. If two players are of different cultures or political ideologies, but never know this about each other, the practical effect of their diversity is negated (Williams et al., 2007) and gains in social capital are in doubt. Multiple communication channels reintroduce communication cues that are important to enable the exchange of diverse information and the horizon-broadening function. For example, the use of game-related discussion forums facilitates communication at a more flexible pace and across a broader range of topics, while the use of social network sites allows acquainted players to know more about each other beyond game settings (Ellison et al., 2007). Moreover, the use of voice chat increases sociability and trust among players, as they know the person talking (Ratan et al., 2010). As trust is being built among players, the use of more private communication channels, such as instant messaging, helps to secure practical and

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