Social capital, coplaying patterns, and health disruptions: A survey of Massively Multiplayer Online Game participants in China

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ABSTRACT

We examined the relationship between social capital, coplaying patterns and health disruptions in a large sample of gamers in a popular Chinese Massively Multiplayer Online Game, Chevaliers' Romance 3. Partnering with the game operator, we fielded an online survey (N = 18813) in 2011. Social capital was measured by (1) psychometric measures of bridging and bonding social capital, and (2) core discussion network size using name generators, as well as the number of strong and weak ties within the core network. Controlling for sociodemographic variables, we found that bonding social capital was associated with lower odds of frequent or occasional health disruptions, but bridging social capital did not have any effect. Weak ties in the core network were associated with greater odds of health disruptions. Coplaying patterns also mattered – people playing with friends first met through CR3 were less likely to have health disruptions, while playing with existing friends and families tended to have the opposite effect.

Overall, social capital and coplaying patterns appear to have significant health implications for participants in online games.

1. Introduction

An increasingly significant portion of people's lives are spent in front of screens. Research in the past few decades has made strides in linking media use, especially Internet use, to various health outcomes (Caplan, 2003; Kraut et al., 1998; Nabi, Prestin, & So, 2013; Stepanikova, Nie, & He, 2010). Essential to the question is how specific online media/activities might differ in affecting health and wellbeing (Shen & Williams, 2011). One particular activity, online gaming, has seen explosive growth over the past decade, yet its effect on health and wellbeing remains murky. According to the Entertainment Software Association, a staggering 59% of all Americans play digital games, and they have been playing for 14 years on average (ESA, 2014). European and Asian countries are also similar hotbeds for gaming consumption and development. The extent to which online gaming activities are influencing people's physical and mental health poses a pressing yet under-studied question.

This study focuses on a specific genre of online games with growing popularity: Massively Multiplayer Online Games

(MMOs). MMOs are two- or three-dimensional persistent online spaces where participants could complete quests, coordinate joint actions, and advance their character, called "avatars" (Castronova, 2005; Ducheneaut, Yee, Nickell, & Moore, 2006; Williams, Yee, & Caplan, 2008). More important, all these activities can be, and sometimes must be, accomplished through social interactions with other players. The capability of building social relationships, transient or long-lasting, fundamentally distinguishes MMOs from other games where interacting with non-player characters (NPCs) rather than other player had been the norm. Because of MMOs' social nature, investigating their psychosocial and health outcomes could also contribute to the larger conversation on the effects of Internet and social media in general.

This study makes a unique contribution to the field of online games and health as it represents one of the first projects systematically assessing how social capital and coplaying patterns are associated with health disruptions for players of a large-scale Chinese MMO. Social capital, broadly referring to social structures and the individual and collective benefits associated with them (Burt, 1992; Coleman, 1988; Putnam, 2001), has been linked to various health outcomes, but few studies have tested its effects on health in the context of online games. This study also uses two distinct measures of social capital: (1) individual-level psychometric measures of bridging and bonding social capital, and (2) the

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players' core discussion networks. In addition, it is the first study that examines the health implications of coplaying patterns, a crucial variable measuring players' social experiences in MMOs.

2. Literature review

2.1. Displacement hypotheses

One mechanism through which online gaming may affect health and wellbeing is the time displacement hypothesis. The inelasticity of time, that there are only a fixed number of hours in a day, dictates that participation in a new activity is bound to displace the time originally spent on another (Nie, 2001; Shen & Williams, 2011). As an often sedentary and solitary activity, gaming inevitably displaces the time that would otherwise be spent on physical activities and/or interacting with family and friends. The displacement hypothesis has received early support for Internet use in general (Kraut et al., 1998), and has been used to explain lower participation in sports and higher socioemotional difficulties for game players (Booker, Skew, Kelly, & Sacker, 2014). Time-diary research of adolescents also showed that gamers spent less time doing homework, reading and interacting with family and friends than non-gamer peers (Cummings & Vandewater, 2007).

A corollary of time displacement is social displacement. Numerous empirical studies debunked the stereotype that gamers tend to be isolated couch potatoes (Williams et al., 2008). In fact, online games today are enjoyable precisely because they are designed to engage players with other people—either their existing social ties or new ones (Cole & Griffiths, 2007). However, because one's time and energy on creating and maintaining social relationships are also limited, playing online games naturally takes away time from face-to-face interactions with one's offline ties, resulting in displacement of existing social contacts for online ones. The net effect of social displacement is still inconclusive. Some researchers found evidence for an overall smaller and poorer offline social circle as a result of online gaming (Kowert, Domahidi, Festl, & Quandt, 2014). Negative life consequences, ranging from physical fatigue to depressive tendencies may ensue when MMO players develop a preference for online social interactions over offline exchanges (Liu & Peng, 2009; Stetina, Kothgassner, Lehenbauer, & Kryspin-Exner, 2011). Yet, many others demonstrate that online gaming may result in broader as well as deeper social relationships (Kobayashi, 2010; Trepte, Reinecke, & Juechems, 2012).

2.2. Social capital

A concept critical to understanding the net effect of social displacement is social capital. It also connects individuals' social relationships with health outcomes as an important intermediate variable. Social capital generally refers to people's social relationships and the benefits, trust and reciprocity made available through such relationships (Burt, 1992; Kawachi, Kennedy, & Glass, 1999; Putnam, 2001; Williams, 2006). As Coleman (1988) put it, social capital "… is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure" (p. S98). As such, social capital subsumes both the social structure and outcomes produced by the structure (Shen, Monge, & Williams, 2014; Williams, 2006). Social capital has become a key concept in studying the effects of emerging media, including social networking sites (Ellison, Steinfield, & Lampe, 2007), online news (Gil de Zúñiga, Jung, & Valenzuela, 2012), and online communities (Ganley & Lampe, 2009; Shen & Cage, 2015).

Based on the types of social structures and the associated outcomes, social capital can be further categorized into bridging social capital and bonding social capital (Putnam, 2001; Williams, 2006). Bridging social capital refers to the type of social structure consisting of weak and episodic ties, which often link people from heterogeneous groups. Bridging social capital provides the focal individual with diverse information and perspectives, but falls short of emotional and social support. By contrast, bonding social capital refers to the type of social structure encompassing primarily strong and long-lasting ties, which often link people in homogeneous social circles. It provides emotional support and solidarity, which could insulate people from the negative consequences of stressful life events (Granovetter, 1983; Putnam, 2001; Williams, 2006).

The health implications of social capital are well-established. Researchers have suggested several mechanisms connecting social capital with individual and community health indicators: (1) social capital facilitates the diffusion of health-related information, (2) social capital promotes the diffusion of pro-health behaviors and deters deviant, unhealthy behaviors, (3) social capital may enlarge access to health resources and amenities, and (4) social capital provides emotional and material support at the time of need, shielding people from exposure to stress and helping them cope with stress better (Beaudoin, 2009; Cohen, Brissette, Skoner, & Doyle, 2000; Cohen & Hoberman, 1983; Kawachi & Berkman, 2000; Thoits, 2010). These mechanisms were supported by empirical data. For example, social capital is found to associate with better wellbeing (Kawachi, Subramanian, & Kim, 2008), lower risk of mortality (Kawachi et al., 1999), and lower susceptibility to infectious diseases such as the common cold (Cohen et al., 2000). In particular, a recent study found that workers in the US and China possessing more social capital tend to have less health disruptions, independent of occupational status and working conditions (McDonald, Chen, & Crowley, 2013).

To date, research on the implications of online gaming has used social capital as a productive conceptual framework. For example, one study found that problematic gamers (those who show signs of compulsive gaming) and non-problematic gamers differ significantly in the social capital they accrue as a result of game use – the former group showed higher online social capital but lower offline social capital, while the latter group showed higher online social capital only (Collins & Freeman, 2013). Another study showed that online gamers' physical proximity, social proximity, and their mutual familiarity all contributed to bridging and bonding social capital, which in turn contributed to offline social support (Trepte et al., 2012). However, the connection between social capital and health indicators in an online game context remains to be examined.

Among the four mechanisms linking social capital and health, the "buffering" mechanism, that social capital buffers against life's inevitable stress and health disruptions, is particularly relevant for MMO gamers. This study contributes to the extant literature by examining social capital and health disruptions in a large Chinese MMO. It operationalizes social capital using a two-pronged approach, covering both the perceived *benefits* of social relationships as well as the *relationships* themselves. First, it uses the validated psychometric scales of bridging and bonding social capital (Williams, 2006). The scales measure the perceived social capital benefits such as emotional and substantive support, trust, and access to heterogeneous information. This operationalization has been widely used in prior studies of emerging media in general (e.g., Ellison et al., 2007) and online games in particular (e.g., Trepte et al., 2012).

Second, this study also operationalizes social capital using the size of one's core discussion network and the number of strong and weak ties within the core network. The core discussion