Computers in Human Behavior 27 (2011) 1211–1222

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Enhancing one life rather than living two: Playing MMOs with offline friends

Jeffrey G. Snodgrass [a,*], Michael G. Lacy [b], H.J. Francois Dengah II [c], Jesse Fagan [b]

[a] Colorado State University (CSU), Department of Anthropology, Fort Collins, CO 80523-1787, United States
[b] Colorado State University (CSU), Sociology, Fort Collins, CO 80523-1787, United States
[c] University of Alabama, Anthropology, Tascaloosa, AL 35487-0210, United States

ARTICLE INFO

Article history:
Available online 2 February 2011

Keywords:
Computer games
Social ties
Immersion
Internet addiction
Problematic MMO play

ABSTRACT

We use ethnographic, interview, and survey data to examine problematic play within the popular online game, *World of Warcraft*, or '*WoW*' for short. Research shows that players drawn to the interpersonal dimensions of online games are more prone to experience negative outcomes associated with their computer use. Our study suggests that it is not only *whether* online gamers seek meaningful social interactions that determine if *WoW* play becomes problematic, but exactly *how* players interact with others in online game-worlds. Specifically, levels of problematic *WoW* play depend on the extent gamers play with offline or 'real-life' friends and relations. Our survey data reveals both a *direct* relationship between playing *WoW* with offline friends and problematic online gaming and also an *indirect* one mediated by 'immersion' (defined as the extent that players feel like they are *in* a virtual world and in some cases *actually* their character). Interpreting these results through ethnographic and interview data, we suggest that playing *WoW* with real-life-friends allows gamers to transfer in-game accomplishments and experiences into offline social networks. Rather than competing and conflicting with the world outside of the game, *WoW* played in this way tends to enhance gamers' offline lives. Further, by keeping gamers in touch with perspectives outside of *WoW*, playing with real-life-friends instills critical distance and greater awareness of how excessive play can damage offline commitments and relationships, allowing gamers to better monitor, evaluate, and ultimately regulate excessive game-play.

1. Introduction

1.1. Overview

Massively multiplayer online role playing games ('MMORPGs' or 'MMOs' for short) are growing in popularity, melding as they do "the fun and challenge of video games with the social rewards of an online community" (Seay & Kraut, 2007, p. 829). For example, *World of Warcraft* (*WoW*), the MMO that is the focus of this study, reached 11.5 million monthly subscribers in 2008, pointing to this game's particular appeal (Blizzard Entertainment, 2008a). However, a certain percentage of MMO gamers play, in their own estimations, *excessively*, their commitment to online fun and friends conflicting with and even eclipsing in importance their offline lives (Griffiths, Davies, & Chappell, 2002; Kraut et al., 1998). Unable to successfully negotiate on- and offline existences, these gamers' play becomes 'problematic'—the source of not only fun but also anxiety, distress, and conflict (Caplan, Williams, & Yee, 2009; Davis, Flett, & Besser, 2002; Seay & Kraut, 2007; Yee, 2002, 2007b).

In this article, we explore whether gaming online with friends and family also known offline – or, 'in real-life' (IRL), to reference the imperfect and surely misleading term employed both by our respondents and certain scholars from whose research we draw – might minimize problematic MMO play.[1] We hypothesize that gaming in this way might help players bridge their on- and offline existences, and also to better monitor, evaluate, and regulate potentially problematic patterns of play, thus allowing *WoW* experiences to enhance and strengthen rather than compete and interfere with offline lives. To test our ideas, we use a combination of ethnographic, interview, and survey methods. After grounding our study with respect to relevant literature and also describing in more detail

* Corresponding author. Tel.: +1 970 491 5894; fax: +1 970 491 7597.
E-mail addresses: Jeffrey.Snodgrass@Colostate.edu (J.G. Snodgrass), Michael.Lacy@Colostate.edu (M.G. Lacy), dengah@gmail.com (H.J. Francois Dengah), aftersox@gmail.com (J. Fagan).

0747-5632/$ - see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.chb.2011.01.001

[1] In research of direct relevance to our own, both Clark (2006) and Seay and Kraut (2007) speak of 'real-life friends' to refer to relationships that include important offline components. In using this same phrasing, we do not mean to imply that online friends are not 'real'—they surely are. Rather, we follow our respondents and other scholars and use this terminology as a convenient shorthand to signal that exclusively online interactions and activities are both somewhat separate and different from those with important offline components, though researchers vigorously debate the form and extent of such separations and differences. For more on the difficulties of how to speak of 'virtual' places like MMOs—each of which may exhibit varying degrees of sensorial realism—as they are separated from but also embedded within life offline, see Agre (1999), Bainbridge (2007a, 2007b), Golub (2010), Wilson and Peterson (2002). For a critique of the more general 'magic circle' idea that games are different and separated from the so-called 'real' world, see Malaby (2007).

our research hypotheses and methodology, we present our findings. This is followed by a more general discussion of the meaning and significance of these results in relation to current debates about 'problematic' MMO play.

1.2. WoW and MMO play

With its 11.5 million monthly subscribers, *World of Warcraft* is the largest subscription-based MMO and virtual community in the West, about 62% of this part of the world's MMO population when the game's subscribers peaked in 2008 (Blizzard Entertainment, 2008b). Online realities like *WoW* offer a *persistent virtual world* where thousands of users interact in a setting that endures independently of any particular player. In *WoW's* case, the fictitious world that forms the back-drop to this virtual place persists 24 h a day with only brief interruptions for maintenance. Of equal importance is that these massively multiple play spaces are highly *immersive*, stemming in part from powerful 3D graphics that produces absorptive spaces that feel virtually real. The way one's *avatar*, or visual representation of one's character-self, responds to commands, adds to this sensation, as do the mentally and emotionally absorbing quests and plot-lines. Players easily become immersed, feeling as if they actually inhabit another space, losing awareness of the so-called 'real' world, so that consciousness can be said to reside in the virtual space (Castronova, 2005).

WoW offers gamers seemingly endless ways to play and tasks to accomplish, which generally increase in complexity, time necessary to complete, and rewards as they advance in the game. Many tasks are in the form of *quests* with specific goals offered by computer-controlled non-player characters ("NPC's"). Players can accept these quests, travel virtually to accomplish them, and then return to the quest NPC for rewards of treasure and experience points. Just exploring the world, and thus gaining in knowledge as a player, brings many gamers satisfaction as well as specific in-game rewards. Other players more specifically pursue advancement in *levels*, which bestow additional power and ability on a given character, helping them to complete more difficult game challenges, in turn allowing them to advance even further in the game.

Even after completing the game's highest level, many players decide to compete in highly challenging in-game content such as multiplayer *instances* like *dungeons* or *raids* requiring hours of cooperation between 5 and 40 players with groups balanced between different character classes. *WoW* encourages social interaction and collaboration, and many players find collaborative tasks such as raids among the most rewarding aspects of the game. However, because of the social obligations involved to reciprocally help others with their own quests and in-game tasks such as raiding, these collaborations can also lead to heavy demands on player times and thus can add stress to players' lives.

WoW shares some features with social network programs like *Facebook* in bringing people together in a shared virtual space to chat, share ideas and information, and simply socialize. Still, distinct from social networking sites, massively multiplayer gameworlds like *WoW* set the stage for collaborative and simultaneously shared play interactions that seem as real as they are fun, unfolding as they do in a meticulously rendered fantasy world and via avatar-characters who, in many instances, come to feel like second selves.

1.3. 'Problematic' MMO play

A growing body of scholarship speaks of 'internet addiction,' implicitly comparing excessive and out-of-control online behaviors with the abuse of certain substances like alcohol or drugs (Bai, Lin, & Chen, 2001; Holden, 2001; Mitchell, 2000; Young, 1998a, 1998b; Young & Rogers, 1998). Nevertheless, this and similar problems have not as yet been recognized in the American Psychiatric Association's (APA) current *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV, 1995). Proposed revisions to this manual would include 'internet addiction' in an appendix rather than classifying it as a full-fledged addiction – modeling the concept after addictions to gambling (Young, 1998a, 1998b; Young & Rogers, 1998) – which suggests some professional psychiatric ambivalence about the phenomenon (Holden, 2010).

Given the contested nature of the phenomenon, many scholars refer to potentially excessive Web activity as 'problematic internet usage' (PIU), rather than as 'internet addiction' (Yellowlees & Marks, 2007). Nevertheless, scholars typically associate PIU with symptoms analogous to those of classic addiction, such as compulsion to stay online, cognitive preoccupation with online activity, maladaptive use of the internet to regulate mood, experiences of withdrawal when unable to use the internet, preference for online to offline interactions, spending excessive time online, and experiencing disruptions to work and relationships because of online activity (e.g., Caplan et al., 2009; Yee, 2002, 2007b). The term 'PIU' is used to avoid connoting drug abuse, a labeling that might lead to 'moral panics' rather than objective understandings (Golub & Lingley, 2008). Indeed, a term such as 'addiction' can seem to attribute an almost chemical-like content and structure of the internet that propels players into addictive cycles of play and dependency, a set of assumptions that have yet to be demonstrated (Holden, 2010; Seay & Kraut, 2007; Yee, 2002). Scholars speaking of PIU instead focus on the negative personal and interpersonal consequences to which certain forms of internet usage can contribute, such as conflicts between online and offline commitments, the erosion of school, jobs, and relationships, and ultimately anxiety and emotional distress. As Seay and Kraut (2007, p. 830) put it, describing MMO play in particular: "online gaming would become problematic when it dominates and displaces other behaviors, leads to conflict, or when inability to play causes anxiety". That is, they treat PIU as a measure of self-professed personal distress, which need not name the origins of such problematic behavior, be these found in the content and structure of the internet itself or within individual psyches and social relations. Again, Seay and Kraut (2007, p. 830) say, this time echoing ideas found in Charlton, 2002: "Problematic use can be operationalized as consumption of an entertainment product in such amounts or at such times that it causes demonstrable problems in the user's real life extreme enough to cause an individual to identify and report them."

In fact, a variety of researchers prefer to speak of PIU only in reference to specific online activities, such as gambling, email, or pornography, suggesting that each may have its own etiology and particular consequences (Yellowlees & Marks, 2007; Yee, 2007b). And an expanding body of research examines problematic use of online games, studied more narrowly apart from PIU conceived as a general phenomenon (Caplan et al., 2009; Davis et al., 2002; Seay & Kraut, 2007; Yee, 2007b; Yellowlees & Marks, 2007). As in studies of PIU more broadly conceived, researchers into the meanings and consequences of problematic MMO play generally search for personal and interpersonal factors associated with excessive MMO usage, rather than focusing on the drug-like qualities of MMOs themselves. For example, in relation to personal factors, studies have found associations between problematic MMO play and pre-existing psychological distress related to depression, anxiety, introversion, impulse control, and loneliness (Caplan et al., 2009; Nalwa & Anand, 2003; Morahan-Martin & Schumacher, 2000; Seay & Kraut, 2007; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000; Whang, Lee, & Chang, 2003; Young & Rogers, 1998), and also between problematic MMO activity and gamers'

motivations for playing (Yee, 2006, 2007a, 2007b, 2008). Also, research consistently shows that players drawn to the interpersonal and thus social dimensions of the internet are more prone to experience negative outcomes associated with their computer use, especially in those cases where virtual friendships and relationships grow to eclipse actual ones (Caplan, 2002, 2003; Caplan et al., 2009; Davis et al., 2002; McKenna & Bargh, 2000; Morahan-Martin & Schumacher, 2000, 2003; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008; Young, 1998a, 1998b; Young & Rogers, 1998). This is confirmed by studies of MMOs that point to relationships between so-called 'social' motivations and patterns of use that can lead to long hours in the game and even addictive forms of play (Ducheneaut, Yee, Nickell, & Moore, 2006; Li & Chung, 2006; Ng & Wiemer-Hastings, 2005; Pisan, 2007; Song, Larose, Eastin, & Lin, 2004).

Fewer studies have explored exactly how particular forms of online socializing might contribute to problematic MMO play. Authors associated with the PlayOn project at PARC do examine the way the social dynamics of "guilds" (cooperative play groups among MMO players) affect players' behaviors, attitudes, style of play, and fun (Ducheneaut et al., 2006, 2007; Williams et al., 2006). However, they do not explore how guild socializing might impact the emotional wellness outcomes of concern to our own research. Of direct current relevance, Clark (2006) finds a negative association between playing with 'real-life-friends' and MMO 'addiction' (both phrases his terminology), but leaves the mechanism largely unspecified. Likewise, Seay and Kraut (2007) posit that playing with 'real-life-friends' (again, the authors' terminology) might minimize problematic MMO activity, but, unlike Clark (2006), they find no significant associations. This is surprising in that playing with real-life-friends is expected to keep gamers connected to perspectives outside the MMO and to allow for more objective monitoring and evaluation of excessive play patterns that negatively damage their offline relationships—key components of the 'self-regulation' perspective Seay and Kraut (2007) explore in their research into problematic online play.

Despite the lack of explicit evidence about mechanisms, research findings from MMO players' motivations suggest several reasons why play with offline or real-life relations might lead to healthier online activity. For example, Bartle (2003) frames 'immersion' as a player's general sense of being *in* a virtual world and in some cases *actually* being their character—a process that leads some players to experience MMOs like *WoW* as more than 'almost' real. A range of studies consistently link immersion to problematic play (Caplan et al., 2009; Charlton & Danforth, 2007; Chou & Ting, 2003; Seay & Kraut, 2007; Yee, 2006, 2007; on the health consequences of immersion, typically termed 'absorption,' from a more general and anthropological perspective, see Luhrmann, 2005; Luhrmann, Nusbaum, & Thisted, 2009; Lynn, 2005; Seligman, 2005a, 2005b; Seligman & Kirmayer, 2008; Spiegel & Cardena, 1991).[2] Playing with real-life relations, logically, might help players maintain awareness of perspectives and standards outside of the game, helping players to minimize their risk of too deep of fantasy engagement with *WoW*—and thus less likely to immerse themselves 'toxically' in MMOs (on 'toxic immersion,' see Castronova, 2005). Likewise, research shows that many gamers are driven by 'achievement' motivations and that, further, this drive is positively associated with distressful play (e.g., Charlton & Danforth, 2007; Deci, Koestner, & Ryan, 1999; Kelly, 2004; PlayOn, 2008; Yee, 2006, 2007b). In these cases, interacting online with offline friends might allow gamers to transfer in-game accomplishments and experiences into their real-life social networks. Rather than creating conflict with the actual-world through excessive time spent online, this form of play might allow gamers to build up and enhance their actual lives.

2. Methods

2.1. Research model

We examine whether playing MMOs with real-life-friends, family, and relations might minimize 'problematic' gaming behavior and experiences (Seay & Kraut, 2007), and whether such protection might come from a reduction in immersive experience.

Specifically, we hypothesize:

- H1: Playing *WoW* with offline or 'real-life' friends and other relations will be negatively associated with problematic MMO use.
- H2: Playing *WoW* with offline relations lessens 'immersion' into this MMO, which itself decreases gamers' risks of experiencing problematic play.

We test each of these hypotheses with data from our online survey and also look for relevant data in our ethnography and interviews.

More tentatively, we also pose the following two research questions, through which we frame interpretations of our results, looking for support for these ideas in our ethnography, interviews, and the scholarly literature:

- RQ1: Can *WoW* play with offline relations enhance rather than conflict with or compromise offline commitments?
- RQ2: Does *WoW* play with offline relations give gamers more awareness of how certain play patterns can negatively damage offline relationships, and thereby promote self-regulation?

2.2. Sampling and procedures

We began with an ethnographic phase, conducting participant-observation fieldwork in *World of Warcraft*. Three of this paper's co-authors, Snodgrass, Dengah and Fagan played *WoW* extensively, often together, with this paper's lead author and also Fogan reaching the game's maximum level cap and engaging in a wide range of *WoW* activities. Most observations occurred within the context of our own in-game 'guilds' and playgroups—some of it within the guild we ourselves created—which were composed of both strangers as well as those known to us from settings outside the game. In addition, we conducted informal in-game and also post-game interviews with co-players. We documented these discussions in field journals, expanding on our notes after these gaming activities and conversations had concluded.

Three interrelated interview protocols guided us in our thirty more formal interviews, some conducted face-to-face in the real-world, others virtually through in-game interactions and chat programs. These interviewees were solicited from persons associated with local gaming communities and centers as well as through our own guilds and play networks, followed by snowball sampling from these initial respondents. These interviews were "semistructured" (Bernard, 2006), in that we asked interviewees to expand and clarify their answers and we were free to pursue interesting leads not listed on our protocols.

[2] *WoW* play shares features with many forms of absorptive 'flow' experiences—from chess-playing to competitive running to gambling to rock-climbing—discussed by Csikszentmihalyi (2008 [1990]) and others. Flow states, as Csikszentmihalyi and others explain, are deeply absorptive altered states of consciousness in which individuals are challenged enough to be stimulated and deeply engaged but not so challenged as to be overwhelmed.

Table 1
Descriptive statistics ($n = 255$).

Variable	Pct or mean	SD
US national (1/0)	72.6%	
Race (White)	89.8%	
Gender (Female)	20.4%	
Is currently a student	45.4%	
Unemployed (1/0)	26.2%	
Age	26.8	8.33
In married/committed relationship	52.9%	
Income over $30,000	49.8%	
Completed college	42.4%	
Plays *WoW* 20 + hours/week	61.6%	
Play *WoW* for two years +	58.8%	
Absorption–immersion scale	29.6	10.7
Problematic play scale	46.9	16.0

Our data collection culminated with a formal Web questionnaire, which we posted on *WoW* blogs and gamer sites and also extended invitations through our own personal play networks. A survey similar to that employed in the present research is ongoing (http://tinyurl.com/wowwellness), though the results presented in this paper use only the 255 responses received up through fall 2009.

2.3. Measures

During *WoW* participant-observation, we trained ourselves to monitor and note how playing with friends and relations known offline changed our gaming experiences. Our interview protocols were designed to help us, among other things, further assess the relationship between playing *WoW* with real-life-friends (or not) and gamers' experiences.

Our Web survey of approximately 100 items elicited basic demographic data, degree of *WoW* usage and accomplishment within the game, motivation and styles of game-play, and numerous other kinds of information related to gamers' lives and play. Survey topics of particular focus in this article included social patterns of play within *WoW*, such as the extent that gamers played with friends and family known offline as compared to playing only with strangers or friends known exclusively online. Also, two summated ratings scales were developed for our survey, one to measure individual players' levels of immersive or absorptive *WoW* experience, and another to measure problematic MMO play; details of items included are available in Appendix A. The immersion/dissociation scale was modeled after two protocols commonly used in psychological anthropology, the Tellegen Absorption Scale and the Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986; Tellegen & Atkinson, 1974). Here, gamers responded to *WoW*-specific questions about the extent to which their play involved distortions of perception, memory, and identity typical of absorption–immersion in other contexts. For example, players were asked about their levels of imaginative identification with their characters, as well as the extent to which *WoW* play led them to become unaware of events happening around them in the real-world, leading them to, for example, ignore the demands and discomforts of their real-world bodies, lose track of actual-world time, and so forth. The problematic MMO scale play drew from Young's commonly used Internet Addiction Test (IAT) (Young, 1998a, 1998b, 2010; Young & Rogers, 1998).[3] Items in this scale measure the extent that individuals reported playing compulsively in ways that negatively affected other dimensions of their lives, such as jobs and relationships. In addition, questions asked about experiences of compulsive play, cognitive preoccupation with the game, maladaptive use of the game to regulate mood, symptoms of withdrawal when unable to play, preferences of for game-world over actual-world interactions, and play of excessive duration.

2.4. Data analysis

Ethnographic experiences and observations, documented in field-notes, provided the basis for self-reflexive discussions among members of our research team about how playing with real-life-friends impacted our MMO experiences. These discussions led us to construct, in our opinion, more meaningful formal interview and survey questions. They also helped us to understand and interpret our interview transcripts and survey data.

Our thirty more formal interviews were digitally recorded, transcribed, and coded for common themes by the same two individuals to ensure accuracy and consistency. Transcripts and codes were managed with ATLAS.ti (v5.2), a qualitative data management and analysis program. In this article, we focus on interview respondents' discussions, of which we present representative excerpts, of the positive and negative aspects of playing *WoW* with real-life-friends and relations.

Our survey analysis began with simple descriptions of key variables of interest. But the core of our analysis and arguments rests on a number of linear regression models, which treat immersion and playing with real-life-friends variables as major predictors and problematic MMO play as an outcome, while adjusting for several demographic control-variables. The controls presented in our regressions resulted from exploring various models with different demographic controls and picking for inclusion in further analysis only the three strongest predictors (as determined by hypothesis tests on the overall model), thus helping to avoid an excessive number of predictor variables in relation to the modest ($n = 255$) sample size. We also included a further control: the overall (self-reported) quality of the respondent's actual-world social and friendship network.[4] This variable was considered in order to rule out a rival explanation of our findings about the social context of *WoW* play in relation to problematic play: namely that our actual-world social network variables are only proxies for the overall quality of the respondent's social connections, and that it is the quality of one's actual-world social network that is truly protective in relation to immersion and problematic play. In statistical parlance, the relationship between playing with real-life-friends or not and *WoW* problematic play would be 'spurious.' Finally, to facilitate interpreting results involving the immersion scale, we have converted it to a standardized basis for use in all analyses, i.e., scores are in standard deviation units.

3. Research results

3.1. Survey

Tables 1–4 offer descriptive statistics for demographic and other control-variables (as suggested in the literature on problematic MMO play), as well as for variables describing players' social interactions in *WoW* and their levels of absorptive and problematic *WoW* experiences.

[3] As mentioned, we follow other researchers (e.g., Caplan et al., 2009) and measure problematic MMO play through symptoms like those commonly associated with addiction, although we avoid the term 'addiction' in light of its disputed status and clinical and pejorative associations.

[4] This item was elicited as a part of a set of questions related to how gamers' were in sync or 'consonant' with culturally-defined models of success. This 'cultural consonance' (Dressler, Borges, Balieiro, & Dos Santos, 2005) measure consisted of a 19-item scale that included multiple questions related to how satisfied each respondent was with their lives, including their interpersonal lives and relationships. For arguments related to actual-world 'cultural consonance' and *WoW* play, see Snodgrass, Lacy, Francois Dengah II, & Fagan (in preparation).

Table 2
Frequency distribution for items relation to *WoW* play with friends and strangers. (n = 255).

	All (%)	Almost all (%)	Many (%)	A few (%)	None (%)
How many of your friends are *WoW* "gamers?"	0.8	10.2	24.3	52.6	12.2
Of people you regularly play with, how many do you know in real life?	5.1	9.0	14.9	58.3	12.6
	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
In group situations in *WoW*, how often do you play with others you don't know?	11.0	39.2	35.3	14.5	0.4
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
I have a rich social life/network of friends.	21.2	37.2	19.6	16.9	5.1
	More *WoW* (%)	Same (%)	More real life (%)		
Time spent last two weeks interacting with *WoW* friends vs. real-life-friends	37.9	18.6	43.5		
	Yes (%)				
Had real life romance with *WoW* acquaintance?	11.4				
Had virtual romance with someone in *WoW*?	15.7				
Play *WoW* with family?	27.6				
Play *WoW* with a partner?	27.1				

Table 3
Frequency distribution, selected absorption–immersion scale items, percent distribution.

	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
Lose awareness of real-world while playing.	8.2	21.2	36.9	23.5	10.2
Lose track of time passage while playing	14.9	24.3	25.5	17.3	18
Events in *WoW* feel like they are really happening.	3.9	9.8	9.1	16.9	60.2
Events in *WoW* more vivid/memorable than real-world.	5.5	9.0	11.8	27.1	46.7
Feel like I am my character.	5.1	3.1	13.7	16.9	61.2

Table 4
Frequency distributions, selected problematic MMO Play Scale items.

	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
Others complain about amount of time playing.	8.2	16.1	30.2	22.7	22.7
Block disturbing thoughts about life with positive *WoW* thoughts.	6.3	9.4	16.1	20.4	47.8
Job performance or productivity suffers due to *WoW*.	5.1	8.6	17.3	31.0	38.0
Try to cut down amount of spent playing *WoW*.	10.6	13.7	16.5	28.6	30.6

The absorptive-immersion scale described in Section 2.3 was constructed as a summated ratings scale (Cronbach's alpha = 0.90), with items scored from 5 = always down to 1 = never. Across the 14 items, the mean for this scale was 29.6, corresponding to a per-item mean of 2.11. The *WoW*-specific problematic play scale (Cronbach's alpha = 0.94) was created by summing respondents' ratings (5 = Always down to 1 = Never) across 19 items. The mean scale score was 46.9, corresponding to a mean on individual items of 2.5.

Fig. 1 makes a first step in analyzing the survey results, showing how playing *WoW* with persons one knows in the real-world is associated with gamers' experiences of *WoW* absorption–immersion and problematic MMO play. This figure shows how the means of our *WoW*-specific immersion and problematic play scales vary in relation to the number of one's co-players who are offline friends. The graph shows that the amount/frequency of absorptive and problematic play experience follow nearly parallel paths in association with the number of a gamer's co-players who also are friends in real-life. More specifically, both of these phenomena drop sharply among gamers who play with real-life-friends.

A more rigorous analysis of this relationship between playing with real-world friends, immersion, and problematic MMO play appears in Table 5, which shows the results of several linear regression analyses in which the outcome of interest is the scale score for *WoW* problematic play, and in which several control-variables, absorption–immersion, and playing with real-life friends

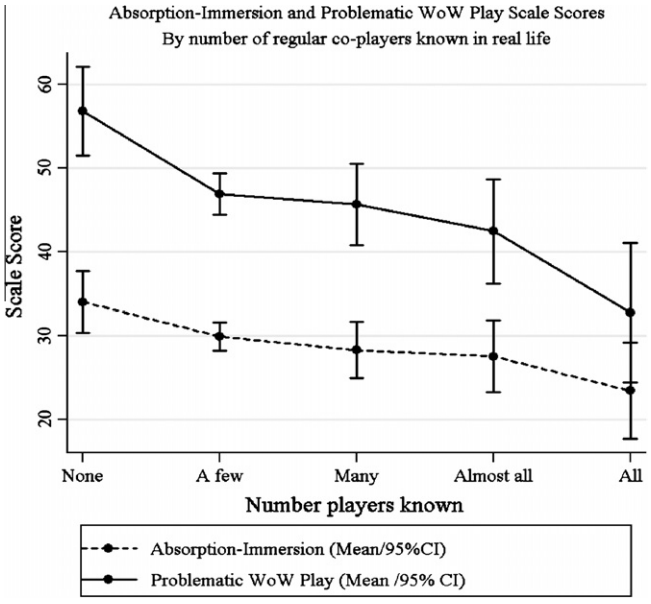

Fig. 1. Absorption–immersion and problematic *WoW* play scale scores by number of regular co-players known in real life.

Table 5
Regression of problematic MMO play scale score on control-variables, playing with friends, and playing with strangers ($n = 255$).

	β	*SE*	β	*SE*	β	*SE*	β	*SE*
Nationality (US = 1)	−3.08	2.17	−3.62	2.07	−3.69*	1.52	−3.86*	1.50
Unemployed (yes = 1)	6.54**	2.31	5.23*	2.23	1.07	1.66	0.70	1.64
Relation status (Married/committed = 1)	−5.34**	2.05	−4.21*	1.99	−2.60	1.47	−2.33	1.45
How many real-life-friends play with?			−3.32***	0.98	−1.99**	0.73	−1.73*	0.72
How often play with strangers?			3.22**	1.12	1.50	0.83	1.57	0.82
Absorb-immersion scale (standardized)					10.66***	0.73	10.13***	0.74
Friendship network/social life							−1.83**	0.62
R^2	0.093		0.183		0.560		0.575	
F	8.6***		11.1***		52.7***		47.8***	

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

or strangers serve as predictors. In the initial control-variables only regression model (leftmost in Table 5), US nationality and being in a committed relationship were negatively related to the level of problematic play, while unemployment was positively related. The next model, found in the second set of data columns of Table 5, supports the relationship presented in Fig. 1. For each point higher the respondent was on playing with actual-world friends, problematic play was predicted by the model to decline by 3 points, approximately 1/3 of a standard deviation, while the mirror image appears in the relationship of the frequency of playing with strangers, where a relationship of similar magnitude appears but with the opposite direction.

More subtle features appear in the next model, seen in the third set of data columns of Table 5, which introduces the absorptive experience scale (recast in standard deviation units here). Absorption–immersion is quite strongly and positively associated with problematic play, with a one standard deviation change in absorption–immersion being associated with about an 11 point increase on the problematic play scale (about 2/3 of a standard deviation). In terms of predictive value as indexed by the R^2 value, immersion accounts for about twice as much of the variation in problematic play as do all the other variables combined. Another point of interest is that relationships between the social network variables (playing with friends and playing with strangers) to problematic play both decline in magnitude by about 50% in this third model that controls for level of immersion, suggesting that immersion plays a mediating role between playing with real-life-friends (and strangers) and *WoW* problematic play. Further support for this idea comes from a formal statistical mediation test using immersion and each of the friends/strangers variables. For each of these variables, we obtained $p < 0.001$ for a test of the hypothesis of 'no mediation' (Ender, 2010; Mackinnon, 2008).

The final regression model in Table 5 (the fourth set of data columns) controls additionally for the overall (self-reported) quality of the respondent's actual-world social and friendship life (see Table 2 for this variable's distribution). If the relationship between playing with real-life-friends (or not) and *WoW* problematic play were 'spurious,' the statistical expectation would be that entering the quality of one's actual-world social network into our model as a further predictor would lead to weakened relationships between these and the original variables. However, this did not occur. In the final model, the size of the relationships of playing *WoW* with actual-world friends (and playing with strangers) in relation to problematic play changed little, supporting the conclusion that these relationships are real and substantive.

3.2. Ethnography

The ethnographic data collected here fills out a sense of what *WoW* players experience in the game, and shows how their experience is shaped by game-related connections with real-life-friends and contacts. To begin, we present episodes selected from the field-notes of the lead author, Snodgrass, in which he recounts the initial thrill of his play as a neophyte. Snodgrass writes from his own, and sometimes from his avatar's, point of view.

> *The Experiences of Snorgerthorn: Events of October 5th, 2007.*[5]
> For 7 hours, from 2:30 pm to 9:30 pm, I found myself totally immersed in this game-world. Flow, immersion, absorption, whatever you want to call it, I felt the thrill and pull of this imagined reality, what it might mean to lose oneself in this virtual almost-but-not-quite-real other place.
> I was slogging away in the newb area of Teldrassil, the island home of the Night Elves, killing spiders, bears, and other low-level mobs. I was learning, even perfecting, basic game skills: how to move, shoot, and retrieve quests; the meanings of gold and white question and exclamation marks hovering over non-player characters' heads (they indicate whether quests are available or completed). At first, my adventuring was mainly limited to solo adventuring: wandering around, getting lost most of the time, inefficient, not to mention frustrating. Then I was invited to a group. Ironmanchild had been by my side for thirty minutes or so, us jointly fighting for our lives, and actually winning. Quite a change from getting lost in an area above my pay grade, and then finding myself repeatedly killed as I ran for my life. Ironmanchild told me where I could find a quest giver—by a cave—that I had been unsuccessfully searching for over the past hour or so. I just couldn't locate him. But this time, with help, Yes! Ironmanchild invited me to group—no choice or question this time, I had to join!
> A while later we were joined by Elixia and then Appendectomy. Elixia frequently called for help. She was being killed! I was there in a flash. Later, Ironmanchild *whispered* to me [a form of chat that is private between two people], 'Elixia loves you.' 'She wants to be your girlfriend.' What? But yes, it did seem that Elixia was often just behind me, gazing longingly at my avatar. Wait, check that. It is impossible to read such emotions through avatars, impossible to see through to that person behind the Wizard, to the ghost in the machine, right? Thought: Would it be possible to betray my real-life partner, Charlotte, through a virtual affair of the heart?
> Hours and hours of playing, but I felt like I couldn't leave the group, even when I wanted to, my actual-world body pushed to its limits, tired and hungry. Why not? On one level, I was having too much success and fun. I was leveling and loving it. But it was more than that. I felt bound, for better or for worse. The

[5] First written at variable periods of time after the experiences themselves, these notes have been further edited to make them suitable for this article's analytical purposes. 'Snorgerthorn' is a pseudonym.

group needed me. I couldn't abandon my new friends, whoever they were. I needed to stay, maybe only for a few more hours, whether I wanted to or not.

Events of December 23rd, 2007.

Howie, an old friend from high-school, had offered to power me through the Stockades, one of *WoW*'s first Alliance *dungeons* or collaborative 5-person *instances*. We hadn't seen much of each other since I was in graduate school—I studying in San Diego, he immersed in the film industry in Los Angeles.

I drove back to my office [to get a reliable internet connection] at 2am to run Stockades. I really didn't know what I was doing. But I was learning, starting to appreciate the complexity and beauty of the instances and collaborative play. We were juiced, my character and my person: my character, now rich in gold and treasure beyond my hopes; my person, using my game-high to revitalize a lost friendship. I say 'my character and my person.' But, in fact, I found it was more difficult to drop into my character, to role-play, to be Snodgerthorn. After all, Howie knew that I was not my character. I was Jeff. In fact, we conversed over Skype with our real-life names, which also kept me more strongly tethered to the actual world.

I thought about how I was getting to know Howie again. That felt good, but also different from my previous play. The play could still be immersive, but I was oftentimes as much in the actual world, or at least memories of the actual world, as in *WoW*'s virtual spaces, tacking back and forth between these two realities as Howie and I reminisced about old times. Talking with Howie helped me to feel more real and less virtual, to reclaim a greater sense of depth and wholeness to my being, feelings lost in this mobile society of ours where we are always separating from our pasts. Maybe this game did have therapeutic dimensions after all? Appreciating our friendship anew, Howie and I made plans to meet in the actual world, and not just through in-game play.

These two vignettes point to the thrill of mastery and achievement that many *WoW* players experience as they advance in the game, but more importantly, to the fun of collaborative group play, which allows them to achieve more in *WoW* that they might playing alone or *soloing*, themes related to gamer motivation we explore in depth elsewhere (Snodgrass et al., in preparation; Snodgrass, Lacy, Francois Dengah II, Fagan, & Most, in press-a; Snodgrass et al., in press-b).

We draw readers' attention here to the contrast between these two gaming experiences, variations that depend on whether one plays with strangers or with actual-world acquaintances. In the first episode, I, as Snodgerthorn, play with strangers. In addition to the feelings of achievement, flow, and absorptive fun, collaborative play such as this allowed me to forge new relationships. The feelings of camaraderie, the deep yet fragile and fleeting emotions of friendship and even romance, help explain much of this game's inexplicable 'pull.' On the negative side, however, achieving success with the help of others led to feelings of obligation that kept me playing longer than I anticipated or desired, moving toward problematic play that is out of my control. Further, the inability to truly know one's playing partners can promote positive feelings of mysterious adventure as one expands social worlds and networks, meeting others, new friends and even potential romantic partners, in beautiful virtual spaces. But such play can also lead to stress-inducing guilt by creating conflicts with real-world commitments. As unlikely as it might seem, the harmless flirting, which is in fact very common in *WoW*, felt like actual cheating on my partner. In this instance, in-game relationships compete and in some cases conflict with, rather than strengthen and support, real-life commitments.

In the second case, *WoW* play resuscitates an old friendship. While play in that context was immersive, I was unable to lose myself as fully, being drawn continually back to my real life by an actual-world friendship and memories of this friendship. The game still feels therapeutic, in part because of its immersive fun and the feelings of accomplishment. But playing with an old friend also reinforced a real life relationship and connected me to my past, leading me to appreciate a fuller and perhaps truer sense of self, enriching my actual-world identity. I also convert game-world accomplishments into real-life currency—as did Howie, admired by myself for his skill. In-game experiences and accomplishments support rather than compete with actual-world striving and commitment. Overall, we believe the dynamics of play with real-life-friends, such as described above, can keep players rooted to the real-world and thus less at risk of problematic play and overvaluing of *WoW*—a theme echoed in our semistructured interviews.

3.3. Interviews

Recounting the thrill she felt playing *WoW*, Laura, a mother of three in her early thirties, speaks of a similar pleasure in achievement:

> So, I was really happy. I made it through and killed the undead I found, and I got lost and couldn't figure out where I was suppose to go. After that, I wound up dying because I jumped, I jumped over something, and there was a bunch [of mobs]. But that is what I like [about the game]. I can have three or four people on me, and I can kill them. And they can be at my level or higher, and I can kill them! And that's great!

Having played video games and RPGs in the past, Laura, a non-traditional student at CSU, nevertheless has only been in *WoW* for about three months, and feels the excitement and frantic high players experience as they struggle to understand and master *WoW*'s sometimes perplexing tasks and rules. Laura tells us about her pride in taking on a dungeon instance by herself and thus completing tasks of which others thought her incapable:

> I went there [to the instance referred to as the *Deadmines*] by myself yesterday. I didn't get to the boss. It was more a point of seeing how long I can live before I died, you know. My husband gave me 15 minutes max—I beat it! … I'm kinda determined to be able to do as much as I can, without other people, because I can. And at level 20 I seem to think I should be able to go into the *Deadmines* and survive, so I keep trying to do it [laughs]. And the fact that I actually beat my record!…before I couldn't get more than about 10ft past the front before I got [killed]!

Laura reported her success in Deadmines as a highlight of her *WoW* play. Game success clearly enhanced her actual-world feelings of self-esteem. Through achievement, she hopes to win respect from her husband. Thus, she does not only potentially build a stronger sense of self. Rather, by bringing *WoW* experiences back into her actual life, she also potentially strengthens what is perhaps the most important relationship in her life.

Elaborating on his most intense moment in a MMO (*Everquest* and not *WoW*), Vince, a small business owner in his mid-forties with a young family, tells of how he felt after saving his friend's character:

> My favorite all-time moment wasn't in this game [*WoW*]… My business partner lost a character, he died down a cliff. He fell, could not find it. He had to go home. It was like one in the morning at the store. I said [in strong voice], 'I'll find this guy.' So I went and I went and I …it was a dangerous area he was

> exploring. So I brought a higher character in there, very dangerous. I had a guide, a real player in the game that was an administrator, and we spent 'til three am finding... and we found a boot sticking out of a side of a mountain, a boot. And touched the boot, and that was one of his previous dead characters, we were able to trace it back and save his character. In that particular game, in *Everquest*, you would lose everything your character had if you don't find it in 24 hours. So he would have lost armor, whatever...thing he had built up over the entire two years of his game. When he quit playing, he was so upset, it was phenomenal, when he went home, he was really upset, he was gonna lose his character. So that was probably my best moment. I found it, all the equipment, and the next morning I called him [triumph in his voice], 'We got it.' 'You know he's back, he's safe.' [Business partner] 'Oh my god!' You know...it was really something.

In this episode, Vince proves his power to, and perhaps over, his friend. He demonstrated that he was able to accomplish the seemingly impossible, something his friend was unable to do. But neither the notion of competitiveness nor power captures Vince's actions or sentiments on this occasion. Rather, for a brief moment, Vince proved himself *heroic*, with an achievement earning him deep gratitude and respect from his business partner and close friend. Like Laura, Vince's game-play built up his actual-world self and strengthened his real-life relationships. Perhaps for these reasons—game-play affecting one's actual-word person—Vince describes this as his most memorable playing moment.

Many of our informants suggest that *WoW*, in creating shared interests and tasks to complete, has brought them closer to people important to them in the actual-world. Laura again:

> But my husband and I, at night when we play, we'll sit back to back. Um I have a laptop, he uses his desktop, and we, we play separate games, he has his, he plays *Final Fantasy*, but we chat, chat back and forth and we read...read what our people say, you know, because I'll read what to him what my guild is talking about, and he'll read what is going on his linkserv, which is how they communicate in his game, and stuff...

Vince echoed similar sentiments, telling us that playing *WoW* with his wife, or simply playing beside her in the same room or on the same bed as she is immersed in a different game, is similar to reading separate novels together. In another example, Laura told how the game gave her common ground with her brother:

> When I started playing *WoW*, my brother would not answer the phone when I called. Trying to communicate with him is very difficult. And now he's actually interested in what I'm doing and what's going on. Now that I'm a [*WoW*] gamer... We now have more of a relationship, we have common ground. [Interviewer: *So* it has improved your relationship?] It *has* improved our relationship to... He's never been in my home for years, two years almost, and he called and asked if he could come over, and I was like uh, yah sure. [Smiles] He got me set up, showed me how to do things. We were jabbering back and forth about how to...It was great, I uh really, really enjoyed it. I, I really like my brother.

In a separate interview, Vince echoed these sentiments, telling how *WoW* changed his relationship with his own brother:

> I'll get a phone call from my brother, 'We're in the middle of this. We really need your hunter.' Or, 'We need your rogue. We cannot get past this one guy.' And I'll login at work, cause he's, it's a two-hour time difference, or whatever it is at the time. I'll login with my character, I'll run over to where they are, we'll finish the thing. I'll say 'I gotta go,' and I'll logout. That's the best part of *WoW*. Somebody will call you or email you and say, 'We're going tonight and we really need the hunter, because you can hold *aggro* [short for 'aggression' from mobs]' ... Or, 'We really need your mage. We need firepower. We don't have that.' You go in and play. That's amazing, that somebody can call you in real life, and you can just do something important. In a game, you do it all the time.

Vince tells us times like these are "his other favorite moments" in games like *WoW*, thus equal to his having saved his business partner's character. In both descriptions, Vince felt needed and connected to important people in his life so that in-game heroism touched actual life relationships.

In sharp contrast are situations in which *WoW* play interferes with or brings detachment from real life, leading to discomfort and distress. A college-student gamer in his twenties describes a friend's play:

> My friend took off two weeks of work so he could level up to 70 as fast as possible. He has a girlfriend...I don't know how he managed to keep that girl around. The few times I'd be over there, he'd be over there sitting on the couch, her looking just completely bored out of her mind, and he wouldn't ... his back would just be turned to her the entire time [playing the game]. And I'd go over there, almost feeling sorry for her, I'd go to hang out with her, cause she was just sitting there by herself, not doing anything, every once in a while he'd say, 'Oh, come over here and look at this, look at whatever we're killing,' and she's just like, you know, rolls her eyes.

Richard, nearing 40 and working in sales for a technology company, described similar problems regarding his *WoW* involvement, in relation to both his wife and his friends:

> Sometimes when my buddies call me and they're, 'Hey, hey let's go fishing, let's go do this.' And it's like, 'Damn you know I really can't.' And there's a very awkward social aspect to that...How do you tell somebody who's a non-gamer, 'I can't hang out with you because I'm playing my computer game?' How do you explain to them without hurting their feelings? They're like, 'Dude it's a game.' Well, yeah, it is a game, but there's 24 people dependent on me [in certain raids for example]. I find myself doing these artful dodges sometimes because I can't just come out and tell them, 'This game is more important to me than you right now.'

Again, *WoW* detracts from rather than enhances actual-world commitments and relationships.

In fact, nearly every informant and interviewee of ours reported how they and other players sometimes overvalue participation in *WoW* to the detriment of their real-world obligations and relationships. 'Negotiation' between real- and virtual-worlds was a recurring theme in our interviews and was mentioned a total of 69 times in our 30 coded interviews, lower in frequency than only a few other coded themes such as 'achievement.' Laura, who acknowledges struggling for self-esteem and respect, sees herself as vulnerable to *WoW* 'addiction' and speaks of such management and negotiation in the following terms:

> ... We [my husband and I] have very addictive personalities, both of us, and so that's why neither of us drink or anything. But so uh, we had to come up with a plan. He's worse than I am. Reeaallly really bad about the computer games. So we had to set out rules ahead of time that we both agreed upon... We limit ourselves, we aren't allowed to play more than three hours in a day, cumulative. ... on the weekends, my husband and I are not on until after nine o'clock...The kids are both in

bed... But we have family, we actually have family day, where we are not allowed to touch the computer until the kids go to bed.

Laura and her husband both battle an urge toward excessive play, but that they do so together may explain their seeming success. Playing together in this way keeps them aware of outside commitments, instilling critical distance from their play and allowing them to see how excessive play can damage life offline. This collaboration allows players like Laura and her husband to achieve a balance that lessens their real-world distress and marital tensions thus also their need to relieve or combat such distress in the game-world.

4. Discussion

4.1. Interpretation of results

Our survey results showed a negative association between playing with real-life-friends and level of MMO problematic play. We interpret that finding and our qualitative data to mean that playing with real-life-friends actually *protects* players against excessive amounts of and destructive immersion in *WoW* game-play. Still, without additional analysis, we could not be certain about assigning causality in this context, since this association might also be interpreted to simply reflect the effects of pre-existing levels of social functioning: Players with pre-existing deficits in real-life relationships might not have real-life-friends with whom to play and, as a separate matter, might be more vulnerable to problematic play as an emotional substitute for these deficits. In this alternate causal pathway, the negative association between playing with real-life-friends and problematic play symptoms would be spurious (confounded), and playing with real-friends, then, would not be expected to protect MMO gamers from distressful forms of game-play.

However, our survey did ask about the richness of actual-world friends, family, and social lives. As shown in the survey results, controlling for this measure of satisfaction with and richness of real-world social networks did not substantially change associations between gaming with real-world friends and their levels of *WoW* over-play, helping us to rule out the rival explanation that the extent to which one reports playing with actual-world friends might be a simple proxy for the overall quality of our respondents' social connections. We thus find support for the conclusion that relationships between playing with real-life-friends as opposed to strangers and problematic MMO gaming are real and not spurious.[6]

In addition, the qualitative portions of our research showed how playing with real-life-friends can help players avoid problematic MMO use and can even enhance offline life, as in the experiences of the lead author, and interviewees like Laura and Vince. They are able to use *WoW*, and particularly their experience of success and achievement within it, to bolster and repair their feelings of worth and esteem. They temporarily live as heroes, defeating evil and rescuing friends even when the odds are against them. By playing *WoW* with real-life relations, players are able to *transfer* in-game accomplishments and status to their real-life networks of friends and family. These *WoW* gamers find actual-world witnesses to their in-game accomplishments. They are able to brag and boast of their achievements—to husbands and business partners in Laura and Vince's cases—even when out-of-*WoW*. Thus, they need not only spend time in *WoW* to feel the benefits of their in-game accomplishments. *WoW* play becomes an extension rather than a replacement of the actual self. Their actual-world persons strengthened, they find more reasons to inhabit the real-world and fewer paths toward excessive and problematic game-play.

Perhaps as importantly, playing with actual-world relations instills in players an awareness of patterns of play that can negatively impact their offline lives, thus allowing for better monitoring, evaluation, and regulation of their play. Laura and her husband, for example, recognize their risk of playing MMOs excessively. Together, they monitor each others' playing time, pointing out excesses and reminding each other of the pleasure, importance, and depth of actual-world relationships, goals, and activities—related to their children and education, for example—thus rooting themselves more firmly in the world outside *WoW* and lessening their chances of getting lost in *WoW*.

The statistical evidence that levels of absorption/immersion partially mediate between play with real-life-friends and the level of problematic *WoW* play also is of interest. A substantive interpretation consistent with this finding would be that gaming with friends changes the experience of play in a way so as reduce the extent of immersion, which in turn reduces the chance of the 'addictive' experience of problematic play. Our observations, interviews, and own playing experiences—that is, again, the qualitative dimensions of our research—further suggests how this mediation might work. In inhabiting *WoW* with offline friends, players like Snodgrass et al., in preparation continually snap back into the out-of-*WoW* world as they laugh, converse, and adventure in this MMO's fantastic universe. As such, playing *WoW* in this way creates cognitive and social bridges between on- and offline worlds, which gives gamers more objective perspective on their MMO use and thus potentially allows for better self-regulation. Thus, playing with friends would have both a direct effect on levels of problematic play, perhaps by enhancing real-life relationships so as to increase social and psychological resilience, and also indirectly, by changing levels of immersion as described here.

4.2. Findings related to previous research

We feel these results add important nuance to recent studies of what researchers term 'problematic' MMO play (Caplan et al., 2009; Davis et al., 2002; Seay & Kraut, 2007; Yee, 2007b)—what other researchers refer to with various terms like online gaming 'addiction' (as mentioned, a term we avoid because of certain connotations) (Bai et al., 2001; Chou & Hsiao, 2000; Chou & Ting, 2003; Chuang, 2006; Faiola, 2006; Griffiths, 1998, 2002; Holden, 2001; Hsu, Wen, & Wu, 2009; Mitchell, 2000; Ng & Wiemer-Hastings, 2005; Wan & Chiou, 2006; Whang et al., 2003; Young, 1998a, 1998b; Young & Rogers, 1998), as well as 'excessive' play (Griffiths et al., 2002), 'pathological Internet use' (Davis, 2001), and 'toxic immersion' (Castronova, 2005). Research consistently shows that players drawn to the interpersonal and social dimensions of the internet experience negative outcomes associated with their internet use related to personal distress and conflicts between on- and offline lives that can further compound such distress and anxiety (e.g., Caplan, 2002, 2003; Caplan et al., 2009; Davis et al., 2002; McKenna & Bargh, 2000; Morahan-Martin & Schumacher, 2000, 2003; van den Eijnden et al., 2008; Young, 1998a; Young, 1998b; Young & Rogers, 1998). This is confirmed by studies of MMOs in particular that point to relationships between *social* motivations and pressures that can lead to excessive and problematic play (Ducheneaut et al., 2006; Li & Chung, 2006; Ng & Wiemer-Hastings, 2005; Pisan, 2007; Song et al., 2004).

In this article, we wish to expand debates about problematic MMO usage by suggesting that it is not only *whether* MMO players are social that is determinant of whether the game adds to or remedies players' life stresses that is determinant but more

[6] In addition, we found no interaction effect between "playing with real-life friends" and "richness of actual-world lives" in relation to levels of problematic *WoW* play as an outcome.

specifically exactly *how* MMO players interact with others in these game-worlds. The literature on problematic MMO use points to the manner that virtual-world relationships can so grow in importance that they crowd out actual-world ones. In turn, this can increase the life stresses and strains felt by internet users, as their offline lives diminish in richness and importance in comparison with their virtual ones. Here, building on preliminary but inconclusive research by other scholars (Clark, 2006; Seay & Kraut, 2007), we show that players who game with real-life-friends and acquaintances are less prone to experience such problems. These gamers use *WoW* to enrich their offline lives rather than in an attempt to live two lives simultaneously. Remaining more fully connected to perspectives and relationships outside the game, these players seem able to more effectively monitor, evaluate, and regulate play that might cause problems with their offline lives, pointing to processes Seay and Kraut (2007) explore in their own research. Controlling their play in this manner, they better avoid negative outcomes associated with excessive MMO play, such as compromised offline lives that can produce feelings of distress and anxiety.

Further, we find merit in joining our research with studies of player motivations. In foundational research, Yee (2007) describes a 3-factor motivational framework—*social, immersion*, and *achievement*—for play in multiplayer online games. In our research, we point to manners that these motivations might interact with each other to produce healthier forms of MMO play. Specifically, certain forms of social play, i.e., playing with real-life-friends, can lessen players' experience of *immersion*. Less able to deeply immerse and thus to inhabit fully *WoW*'s imaginative universe, gamers who play with real-life-friends are nevertheless overall able to better balance actual- and virtual-world goals and relationships. Likewise, playing with real-life-friends can allow players to use the pursuit of in-game *achievements* to bolster their offline lives, transforming behavior that might otherwise lead to unhealthy excessive play into something positive and even heroic.

4.3. Limitations

Our sample of survey and interview respondents was relatively small, non-randomly selected, and limited to *WoW* players. It is thus difficult to generalize beyond our sample to the *WoW* or MMO population as a whole. Further, self-reports from our survey and interviews, too, are surely influenced by respondents wishing to provide socially desirable answers. Finally, though supported by logic and interview and ethnographic evidence, our regressions cannot definitely establish the causal mechanisms to which we allude.

5. Conclusion

We do not pretend to be able to fully account the conditions under which distressful *WoW* play can be minimized. In fact, we think there are most probably multiple paths toward such outcomes. Nevertheless, we do believe that we have identified in this article potentially important direct and indirect paths toward problematic MMO play, as well as potential mechanisms for protecting players from such problematic play. Specifically, greater play with real-life-friends lessens gamers' risks of playing *WoW* problematically both directly and as mediated by its impact on immersion. Importantly, playing this MMO with real-life-friends, then, would seem to compromise gamers' fuller identification with their imagined characters and avatars. In becoming less entrancing in an immersive sense, but more social in a particular way, playing *WoW* in this manner may mean exchanging certain *WoW* pleasures for others. That is, merging on- and offline lives in the manner described in this article may impact not only problematic online play but more generally *WoW's* overall calculus of fun, a topic worthy of further research.

Acknowledgments

We thank the organizers, presenters, and audience members at the 2008 Cultures of Virtual Worlds conference at the University of California, Irvine, and later at the 2008 American Anthropological Association meetings in San Francisco, for providing useful feedback on our research in progress. We also thank the research help of student participants in the collaborative ethnographic research and teaching laboratory, taught in Spring 2008 by this article's lead author: Michael Blank, Lahoma Howard, Chad R. Kershner, Gregory Krambeer, Alissa Leavitt-Reynolds, Adam Reynolds, Jessica Vyvial-Larson, Josh Whaley, and Benjamin Wintersteen.

Appendix A

WoW Absorption-Immersion Scale (*Cronbach's Alpha* = 0.90).

1. I can become so absorbed in the game of *WoW* that I am unaware of other events happening around me.
2. I find that I can sit in-game, doing and thinking of nothing, and am not aware of the passage of time.
3. When I'm playing *WoW*, and someone in the real-world is talking to me, I find that I do not remember all or part of what was said.
4. I find that I am able to ignore discomfort from ignoring bodily needs such as needing to use the bathroom, eat food, sleep or hygiene while playing the game.
5. I find that when I am playing the game that I talk out loud to myself.
6. I find that I bring elements of the game into my real-world experiences.
7. I find that I can become so involved in the game of *WoW* that it feels like it is really happening to me.
8. I find that events in *WoW* are more vivid or memorable than events in my real life.
9. I have the experience of remembering a past event (raid, quest, etc.) so vividly that I feel like I am reliving the event.
10. I find that I act so differently in-game compared to how I act in real life, so much so that I feel as if I am two different people.
11. I feel like I am my character.
12. I can confuse my own name with that of my characters.
13. I have the experience of not being sure if conversations or experiences happened in-game or in real life.
14. I can feel as if I am looking at the real world as though I were in-game.

WoW Addiction Scale (Cronbach's Alpha = 0.94).

1. How often do you neglect household chores to spend more time *WoW*?
2. How often do you prefer the excitement of *WoW* to intimacy with your partner?
3. How often do you form new relationships with fellow *WoW* users?
4. How often do others in your life complain to you about the amount of time you spend on *WoW*?
5. How often do your grades or school work suffer because of the amount of time you spend on *WoW*?
6. How often do you regret the amount of time you spend on *WoW*?

7. How often does your job performance or productivity suffer because of *WoW*?
8. How often do you become defensive or secretive when anyone asks you about *WoW*?
9. How often do you block out disturbing thoughts about your life with positive thoughts related to *WoW*?
10. How often do you find yourself anticipating when you will go on *WoW* again?
11. How often do you fear that life without *WoW* would be boring, empty, and joyless?
12. How often do you snap, yell, or act annoyed if someone bothers you while you are playing *WoW*?
13. How often do you lose sleep due to late-night *WoW* playing?
14. How often do you feel preoccupied with *WoW* when offline, or fantasize about being on *WoW*?
15. How often do you find yourself saying "just a few more minutes" when on *WoW*?
16. How often do you try to cut down the amount of time you spend on *WoW* and fail?
17. How often do you try to hide how long you are on *WoW*?
18. How often do you choose to spend more time on *WoW* over going out with others?
19. How often do you feel depressed, moody, or nervous when you are not playing *WoW*, which goes away once you are back on-line?

References

American Psychiatric Association (1995). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Publishing, Inc..

Agre, P. (1999). Life after cyberspace. *EASST Review, 18*, 3–5.

Atlas ti v5.2. (2002–2010). Berlin: Scientific Software Development GmbH. <http://www.atlas.ti.com>.

Bai, Y. M., Lin, C. C., & Chen, J. Y. (2001). Internet addiction disorder among clients of a virtual clinic. *Psychiatric Services, 52*(10), 1397.

Bainbridge, William Sims (2007a). The scientific research potential of virtual worlds. *Science, 317*, 472–475.

Bainbridge, William Sims (2007b). *The warcraft civilization: Social science in a virtual world*. Cambridge, Mass.: MIT Press.

Bartle, R. (2003). Designing virtual worlds. New Riders Games.

Bernard, H Russell (2006). *Research methods in anthropology: Qualitative and quantitative approaches* (4th ed.). Walnut Creek, CA: Altamira Press.

Bernstein, Eve. M., & Putnam, Frank. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*(12), 727–735.

Blizzard Entertainment (2008a). World of warcraft subscriber base reaches 11.5 million worldwide. <http://us.blizzard.com/en-us/company/press/pressreleases.html?081121> Accessed 25.06.10.

Blizzard Entertainment (2008b). World of Warcraft Reaches New Milestone: 10 Million Subscribers. <http://www.blizzard.com/us/press/080122.html> Accessed 22.02.08.

Caplan, S. E. (2002). Problematic internet use and psychosocial well-being: Development of a theory-based cognitive-behavioral measurement instrument. *Computers in Human Behavior, 18*(5), 553–575.

Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic internet use and psychosocial well-being. *Communication Research, 30*(6), 625–648.

Caplan, S., Williams, D., & Yee, N. (2009). Problematic internet use and psychosocial well-being among MMO players. *Computers in Human Behavior, 25*(6), 1312–1319.

Castronova, Edward. (2005). *Synthetic worlds: The business and culture of online games*. Chicago: U. of Chicago Press.

Charlton, J. P. (2002). A factor-analytic investigation of computer 'addiction' and engagement. *British Journal of Psychology, 93*, 329–344.

Charlton, J. P., & Danforth, I. D. W. (2007). Distinguishing addiction and high engagement in the context of online game playing. *Computers in Human Behavior, 23*, 1531–1548.

Chou, Chien., & Hsiao, M. C. (2000). Internet addiction, usage, gratification, and pleasure experience: The Taiwan college students' case. *Computers and Education, 35*(1), 65–80.

Chou, Ting-Jui, & Ting, Chi-Chen (2003). The role of flow experience in cyber-game addiction. *Cyberpsychology and Behavior, 6*(6), 663–675.

Chuang, Y. C. (2006). Massively multiplayer online role-playing game-induced seizures: A neglected health problem in internet addiction. *Cyberpsychology and Behavior, 9*(4), 451–456.

Clark, N. L. (2006). *Addiction and the structural characteristics of massively multiplayer online games*. Unpublished masters dissertation. Department of Communication, University of Hawaii, Hawaii.

Csikszentmihalyi, Mihaly. (2008). *Flow: The psychology of optimal experience*. New York: Harper and Row ([1990]).

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187–195.

Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic internet use: Implications for pre-employment screening. *CyberPsychology and Behavior, 5*, 331–345 [Special issue: Internet and the workplace].

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627–668.

Dressler, William W., Borges, Camila D., Balieiro, Mauro C., & Dos Santos, J. E. (2005).) Measuring cultural consonance: Examples with special reference to measurement theory in anthropology. *Field Methods, 17*, 331–355.

Ducheneaut, N., Yee, N., Nickell, E., & Moore, R. J. (2006). Alone together? Exploring the social dynamics of massively multiplayer online games. In *Proceedings of CHI 2006* (pp. 407–416). New York: ACM.

Ducheneaut, N., Yee, N., Nickell, E., & Moore, R. J. (2007). The life and death of online gaming communities: A look at guilds in World of Warcraft. In *Proceedings of CHI 2007* (pp. 839–848). San Jose.

Ender, Philip B. (2010). Sgmediation. Program to compute Sobel-Goodman mediation tests. Version 1.4. <http://www.ats.ucla.edu/stat/stata/ado/analysis> Accessed 12.06.10.

Faiola, A. (2006). When escape seems just a mouse-click away; stress-driven addiction to online games spikes in S Korea. *The Washington Post*.

Golub, Alex. (2010). Being in the World (of Warcraft): Raiding, realism, and knowledge production in a massively multiplayer online game. *Anthropological Quarterly, 83*(1), 17–45.

Golub, Alex., & Lingley, Kate. (2008). 'Just like the Qing Empire: Internet addiction, MMOGs, and moral crisis in contemporary China. *Games and Culture, 3*(1), 59–75.

Griffiths, M. (1998). Internet addiction: Does it really exist? In J. Gackenbach (Ed.), *Psychology and the internet: Intrapersonal, interpersonal, and transpersonal implications* (pp. 61–75). San Diego: Academic Press.

Griffiths, M. (2002). *Gambling and gaming addictions in adolescence*. Leicester, UK: Wiley-Blackwell.

Griffiths, M. D., Davies, M. N. O., & Chappell, D. (2002). Excessive online gaming: Implications for education. *Journal of Computer Assisted Learning, 18*(3), 379–380.

Holden, C. (2001). Behavioral addictions: Do they exist? *Science, 294*(5544), 980–982.

Holden, C. (2010). Behavioral addictions debut proposed in DSM-V. *Science, 327*, 935.

Hsu, S. H., Wen, M. H., & Wu, M. C. (2009). Exploring user preferences as predictors of MMORPG addiction. *Computers and Education, 53*, 990–999.

Kelly, R. V. (2004). *Massively multiplayer online role-playing games: The people, the addiction and the playing experience*. Jefferson, NC: McFarland and Company.

Kraut, R., Lundmark, V., Patterson, M., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*, 1017–1031.

Li, S. M., & Chung, T. M. (2006). Internet function and internet addictive behavior. *Computers in Human Behavior, 22*(6), 1067–1071.

Luhrmann, Tanya M. (2005). The art of hearing God: Absorption, dissociation, and contemporary American spirituality. *Spiritus, 5*, 133–157.

Luhrmann, Tanya M., Nusbaum, Howard, & Thisted, Ronald (2009). The absorption hypothesis: Learning to hear God in evangelical Christianity. *American Anthropologist, 112*(1), 66–78.

Lynn, Christopher D. (2005). Adaptive and maladaptive dissociation: An epidemiological and anthropological comparison and proposition for an expanded dissociation model. *Anthropology of Consciousness, 16*(2), 16–49.

MacKinnon, David P. (2008). *Introduction to statistical mediation analysis*. New York: Lawrence Erlbaum.

Malaby, Thomas. M. (2007). Beyond play: A new approach to games. *Games and Culture, 2*(2), 95–113.

McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace. The implications of the internet for personality and social psychology. *Journal of Personality and Social Psychology, 75*, 681–694.

Mitchell, P. (2000). Internet addiction: Genuine diagnosis or not? *Lancet, 355*(9204), 632.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological internet use among college students. *Computers in Human Behavior, 16*, 13–29.

Morahan-Martin, J., & Schumacher, P. (2003). Loneliness and social uses of the internet. *Computers in Human Behavior, 19*, 659–671.

Nalwa, K., & Anand, A. P. (2003). Internet addiction in students: A cause of concern. *Cyberpsychology and Behavior, 6*(6), 653–656.

Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the internet and online gaming. *Cyberpsychology and Behavior, 8*(2), 110–113.

Pisan, Y. (2007). My guild, my people: Role of guilds in massively multiplayer online games. In Paper presented at the proceedings of the fourth Australasian conference on interactive entertainment. Melbourne, Australia.

PlayOn (2008). What are the most important avatar customization features? <http://wow.parc.com/blog/playon/2008/08/what_are_the_most_important_av.html#more>. August 20th, 2008 web entry. Accessed 31.12.10.

Seay, A. Fleming, & Kraut, Robert E. (2007). Project massive: Self-regulation and problematic use of online gaming. In *CHI proceedings, April 28–May 3, 2007*. San Jose, CA.

Seligman, Rebecca (2005a). Distress, dissociation, and embodied experience: Reconsidering the pathways to mediumship and mental health. *Ethos, 33*(1), 71–99.

Seligman, Rebecca (2005b). From affliction to affirmation: Narrative transformation and the therapeutics of Candomble mediumship. *Transcultural Psychiatry, 42*(2), 272–294.

Seligman, Rebecca, & Kirmayer, Laurence (2008). Dissociative experience and cultural neuroscience: Narrative, metaphor and mechanism. *Culture, Medicine And Psychiatry, 32*(1), 31–64.

Shapira, N. A., Goldsmith, T. D., Keck, P. E., Jr., Khosla, U. M., & McElroy, S. L. (2000). Psychiatric features of individuals with problematic internet use. *Journal of Affective Disorders, 57*(1–3), 267–272.

Snodgrass, J. G., Lacy, M. G., Francois Dengah II, H. J., Fagan, J., & Most, D. E. (in press-a). Magical flight and monstrous stress: Technologies of absorption and mental wellness in Azeroth. Culture, Medicine, and Psychiatry. March 2011 issue, 10.1007/s11013-010-9197-4.

Snodgrass, J. G., Francois Dengah II, H. J., Lacy, M. G., Fagan, J., Most, D., Blank, M., et al., (in press-b). Restorative magical adventure or warcrack? Motivated MMO play and the pleasures and perils of online experience. *Games and Culture*, 7(1) (January 2012).

Snodgrass, J. G., Lacy, M. G., Francois Dengah II, H. J., & Fagan, J. (in preparation). I swear to God, I only want people here who are losers!: Cultural dissonance and the therapeutics of online play.

Song, I., Larose, R., Eastin, M. S., & Lin, C. A. (2004). Internet gratifications and internet addiction: On the uses and abuses of new media. *Cyberpsychology and Behavior, 7*(4), 384–394.

Spiegel, David., & Cardena, E. (1991). Disintegrated experience: The dissociative disorders revisited. *Journal of Abnormal Psychology, 100*(3), 366–378.

Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences (“absorption”), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology, 83*, 268–277.

van den Eijnden, R. J. J. M., Meerkerk, G., Vermulst, A. A., Spijkerman, R., & Engels, R. C. M. E. (2008). Online communication, compulsive internet use, and psychosocial well-being among adolescents: A longitudinal study. *Developmental Psychology, 44*, 655–665.

Wan, C. S., & Chiou, W. B. (2006). Psychological motives and online games addiction: A test of flow theory and humanistic needs theory for Taiwanese adolescents. *Cyberpsychology and Behavior, 9*(3), 317–324.

Whang, L. S., Lee, S., & Chang, G. (2003). Internet over-users psychological profiles: A behavior sampling analysis on internet addiction. *Cyberpsychology and Behavior, 6*(2), 143–150.

Williams, D., Ducheneaut, N., Xiong, L., Zhang, Y., Yee, N., & Nickell, E. (2006). From tree house to barracks: The social life of guilds in World of Warcraft. *Games & Culture, 1*(4), 338–361.

Wilson, Samuel M., & Peterson, Leighton C. (2002). The anthropology of online communities. *Annual Reviews in Anthropology, 31*, 449–467.

Yee, Nick (2002). Ariadne: Understanding MMORPG addiction. <http://www.nickyee.com/hub/addiction/home.html> Accessed 31.12.10.

Yee, Nick (2006). The demographics, motivations and derived experiences of users of massively-multiuser online graphical environments. *Teleoperators and Virtual Environments, 15*, 309–329.

Yee, Nick (2007a). Motivations of play in online games. *Cyberpsychology and Behavior, 9*, 772–775.

Yee, Nick. (2007b). The psychology of MMORPGs: Emotional investment, motivations, relationship formation, and problematic usage. In R. Schroeder & A. Axelsson (Eds.), *Avatars at work and play: Collaboration and interaction in shared virtual environments* (pp. 187–207). London: Springer Verlag.

Yee, Nick. (2008). Maps of digital desires: Exploring the topography of gender and play in online games. In Y. Kafai, C. Heeter, J. Denner, & J. Sun (Eds.), *Beyond barbie and mortal kombat: New perspectives on gender and gaming* (pp. 83–96). Cambridge, MA: MIT Press.

Yellowlees, P., & Marks, S. (2007). Problematic internet use or internet addiction? *Computers in Human Behavior, 23*(3), 1447–1453.

Young, K. S. (1998a). Internet addiction: Emergence of a new clinical disorder. *Cyberpsychology and Behavior, 1*(3), 237–244.

Young, K. S. (1998b). *Caught in the Net*. New York, NY: John Wiley & Sons, Inc.

Young, K. S. (2010). IAT (Internet addiction test). <http://www.netaddiction.com/index.php?option=com_bfquiz&view=onepage&catid=46&Itemid=106> Accessed 31.12.10.

Young, K. S., & Rogers, R. C. (1998). The relationship between depression and internet addiction. *CyberPsychology & Behavior, 1*, 25–28.