

# The Effect of Social Support Derived from World of Warcraft on Negative Psychological Symptoms

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## Abstract

Previous research examining players of massively multiplayer online games (MMOGs) suggests that players form meaningful relationships with each other. Other research indicates that people may derive social support from online sources, and this social support has been associated with greater well-being. This study used an online survey of players ( $N = 206$ ) of the MMOG World of Warcraft (WoW) to examine if social support can be derived from MMOGs and to examine its relationship with negative psychological symptoms. Players of WoW were found to derive social support from playing and a positive relationship was found between game engagement and levels of in-game social support. Higher levels of in-game social support were associated with fewer negative psychological symptoms, although this effect was not maintained after accounting for social support derived from the offline sources. Additionally, a small subsample of players ( $n = 21$ ) who played for 44 to 82 hours per week ( $M = 63.33$ ) was identified. These players had significantly lower levels of offline social support and higher levels of negative symptoms compared to the rest of the sample. This study provides evidence that social support can be derived from MMOGs and the associated potential to promote well-being but also highlights the potential harm from spending excessive hours playing.

## Introduction

THE MASSIVELY MULTIPLAYER ONLINE GAME (MMOG) World of Warcraft (WoW) has over 11.5 million players<sup>1</sup> and accounts for an estimated 62% of the MMOG market.<sup>2</sup> Unlike players of single-player games who are alone in a game environment, players of MMOGs inhabit a world shared by thousands of other players with whom they can interact.

It is this social interaction that players describe as the key attraction of MMOGs, including WoW.<sup>3,4</sup> Players may establish a range of in-game groups from small and temporary ad hoc groups to guilds—large permanent organizations of players who participate in scheduled activities and interact with other guilds. These groups facilitate the formation of permanent and rewarding friendships.<sup>3,4,5</sup>

Social support (SS) is the tangible and intangible resources available to individuals through their relationships with other people.<sup>6</sup> Offline, SS has been shown to improve physical health<sup>7</sup> and to reduce negative psychological symptoms, such as depression<sup>6,8</sup> and anxiety.<sup>9,10</sup> It has been found that the higher levels of SS derived from online sources are also associated with lower levels of depression and stress.<sup>11,12</sup>

These studies have examined users who actively use the Internet to link them with others who share a similar situation. Players of MMOGs are united by a shared leisure activity. Little research has explored the potential for this type of interaction to provide users with additional SS and to determine the potential influence of this SS on negative psychological symptoms.

This study was mostly exploratory; however, a number of predictions were made. In line with studies examining the social aspects of MMOGs,<sup>4,5</sup> participants would report deriving SS from WoW (H1) and would report deriving more social companionship-type SS than informational-type SS from WoW (H2). Higher levels of involvement in WoW would be associated with higher levels of in-game SS (H3). Higher levels of both forms of SS would be associated with lower levels of negative psychological symptoms (H4).<sup>8-12</sup>

## Method

### Participants

The participants of this study were players ( $N = 206$ ; 170 male) of WoW ranging in age from 14 to 65 years ( $M = 26.45$ ,  $SD = 7.99$ ).

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### Measures

Demographics, playing history, and playing habits. Participants provided demographic information (e.g., gender, age, country), how long had they played WoW, and their playing habits (hours per week of WoW played, whether they played with the same group of friends, guild membership, online communication external to the game, and playing with a significant other).

**Offline SS.** The Appraisal and Belonging subscales of the Interpersonal Support Evaluation List (ISEL)<sup>13</sup> were used to measure informational and social companionship SS respectively. Each consisted of 10 items answered on a 4-point Likert-type scale from 1, *definitely false*, to 4, *definitely true*; half of the questions were negatively worded. The tenth item of the Belonging subscale, "No one I know would throw a birthday party for me," was not used because of the difficulty in adapting the item to suit the context of WoW.

**In-game SS.** A focus group of WoW players ( $N=4$ ) assisted in the adaptation of the Appraisal and Belonging subscales of the ISEL to the WoW context. The Appraisal item "There is no one that I feel comfortable to talk with about intimate personal problems" was reworded to "There is no one I know through World of Warcraft that I feel comfortable to talk with about intimate personal problems." The Belonging subscale item "If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me" became "If I decide one afternoon that I would like to do an instance (e.g., Ragefire Chasm or the Deadmines), I could easily find someone to go with me." Instances are virtual environments that exist only for a small group of players who share a specific goal.

**Negative psychological symptoms.** The Depression Anxiety Stress Scales (DASS)-21<sup>14</sup> was used to assess symptoms of depression, stress, and anxiety experienced in the last week.

### Procedure

Participants were recruited through announcements on WoW-related Web sites. Before completing the online questionnaire, the potential participants were presented with information about the study, including an informed consent agreement.

### Results

#### Demographics, playing history and playing habits

Two hundred six participants (170, 82.5% male) ages 14 to 65 years ( $M=26.45$ ,  $SD=7.99$ ) completed the online survey. Participants came from 29 different countries, mostly (68.4%) English-speaking Western nations (e.g., United States; see Table 1 for participants' playing history and habits).

#### Hours of WoW played per week

Most participants, ( $n=194$ ) answered the question "Approximately how many hours per week do you spend playing World of Warcraft?" From the responses to this item, two groups were formed: a high-use group ( $n=21$ ; 11.8%) who played between 45 and 82 hours per week ( $M=63.33$ ,  $SD=10.60$ ) and a low-use group ( $n=194$ ; 88.2%) who played less than 44 hours per week ( $M=20.61$ ,  $SD=9.98$ ).

#### Offline SS

The high-use group was found to receive significantly less appraisal SS,  $t(192)=2.98$ ,  $p>0.0124$ , and belonging SS,  $t(192)=3.04$ ,  $p>0.0124$ , than the low-use group, using a Bonferroni adjusted alpha level of 0.0125 (see Table 2 for means).

#### In-game SS and playing history

An analysis of variance (ANOVA) revealed that the length of time playing WoW significantly effected the participants' levels of in-game belonging SS,  $F(4, 201)=4.13$ ,  $p<0.003$  (see Table 1 for means); participants who had played WoW for

TABLE 1. PARTICIPANT PLAYING HISTORY AND HABITS BY MEAN IN-GAME APPRAISAL AND BELONGING SOCIAL SUPPORT AND STANDARD DEVIATIONS, AND RESULTS OF ACROSS-GROUPS T-TESTS COMPARING SOCIAL SUPPORT SCORES

		N	In-game social support			
			Appraisal	SD	Belonging	SD
Time spent playing WoW	> 1 month	2	14.5	2.12	15.00	1.41
	> 6 months	11	16.36	7.39	22.36	7.23
	> 1 year	16	24.00	9.27	26.94	8.57
	1-2 years	61	23.43	8.57	26.57	6.67
	2-4 years	116	23.03	7.96	27.53	5.29
Regularly play with friends	Yes	165	23.93*	8.23	28.02*	5.38
	No	41	18.17*	7.04	21.90*	5.93
Member of a guild or guilds	Yes	179	23.75*	8.01	27.89*	5.19
	No	26	16.08*	7.54	19.77*	6.22
Communicate outside of WOW	Yes	147	24.69*	8.02	28.35*	5.04
	No	59	18.03*	7.10	22.97*	6.50
Play with a significant other	Yes	62	22.82	9.02	27.15	5.80
	No	144	22.76	8.03	26.97	6.09

\* $p < 0.001$ .

TABLE 2. MEAN ISEL SUBSCALE AND DASS-21 SCORES, STANDARD DEVIATIONS, AND CRONBACH'S ALPHA FOR HIGH-USE AND LOW-USE GROUPS AND RESULTS OF ACROSS-GROUPS T-TESTS

Group	Mean ISEL subscale scores				DASS-21
	Offline		In-game		
	Appraisal	Belonging	Appraisal	Belonging	
High-use (n = 21)	28.62** (SD = 7.32) (α = 0.86)	22.43** (SD = 8.20) (α = 0.91)	22.81 (SD = 9.13) (α = 0.91)	29.62 (SD = 5.23) (α = 0.82)	20.29* (SD = 15.43) (α = 0.93)
Low-use (n = 173)	33.10** (SD = 6.41) (α = 0.89)	27.21** (SD = 6.63) (α = 0.91)	22.83 (SD = 8.15) (α = 0.92)	26.66 (SD = 5.81) (α = 0.86)	11.66* (SD = 10.79) (α = 0.92)

ISEL, Interpersonal Support Evaluation List.  
\*p < 0.05; \*\*p < 0.0124.

longer reported higher levels of in-game belonging SS. This result was found among the groups who had played WoW for 2 to 4 years and both the less than 1-month and less than 6-month player groups, and among the 1- and 2-years groups and the less than 1-month group (p < 0.05).

Social support and playing habits

Independent samples t tests indicated that participants who regularly played with friends and guild members, and those who communicated with other players outside of the game, received significantly higher levels of both types of in-game SS than did those who did not have these playing habits (see Table 1).

Negative psychological symptoms

The high-use group was found to have significantly higher total DASS-21 scores, t(22.44) = -2.49, p < 0.05, than the low-use group (see Table 2).

Correlations: low-use group

All significant correlations between the four types of SS and the DASS-21 were negative (see Table 3).

Predictors of negative psychological symptoms

A hierarchical regression analysis examined the DASS-21 scores of the low-use group. The first step (gender and age)

was not significant, R<sup>2</sup> = 0.012, F(3, 168) = 0.708, p > 0.05; the second step (offline appraisal SS, offline belonging SS, in-game appraisal SS, and in-game belonging SS), ΔR<sup>2</sup> = 0.290, ΔF (4, 164) = 17.023, p < 0.001, was significant. Appraisal SS, β = -0.247, p < 0.05, and belonging SS, β = -0.324, p < 0.001, were significant predictors (see Table 4). This analysis was not conducted for the high-use group because of the small size (n = 21).

Discussion

As predicted, participants reported deriving SS from WoW (H1); participants reported deriving more social companionship-type SS than informational-type SS from WoW (H2); and higher levels of involvement in WoW, as indicated by variables such as guild membership, were associated with higher levels of SS derived from WoW (H3). H4, that higher levels of offline and in-game SS would be associated with lower levels of negative psychological symptoms, was partially supported.

This study indicates the potentially positive and negative consequences of MMOG use. Consistent with both SS theory<sup>6-8</sup> and H4, the high-use group had significantly higher levels of negative psychological symptoms. Previous research has suggest that Internet users,<sup>15</sup> including MMOG players,<sup>16,17</sup> may become "addicted" as they withdraw from negative aspects of their lives.<sup>18</sup> Because the present study is entirely correlational in nature, it is impossible to draw any conclusions concerning the causes of the high-use group's

TABLE 3. INTERCORRELATIONS AMONG GENDER, AGE, HOURS OF WoW PLAYED PER WEEK, SOCIAL SUPPORT, AND DASS-21 SCORES FOR LOW-USE GROUP

	1	2	3	4	5	6	7	8
1. Gender	—	0.050	-0.162*	0.148	0.025	-0.037	0.023	-0.057
2. Age		—	-0.046	-0.014	-0.036	-0.101	-0.091	-0.052
3. Hours of WoW played per week			—	0.032	-0.052	0.242**	0.181*	0.091
4. Appraisal SS				—	0.695**	0.247**	0.285**	-0.476**
5. Belonging SS					—	0.172*	0.386**	-0.512**
6. In-game appraisal SS						—	0.584**	-0.097
7. In-game belonging SS							—	-0.208**
8. DASS-21								—

Gender is coded as 1 = male, 2 = female.  
\*p < 0.05; \*\*p < 0.01.

TABLE 4. RESULTS OF REGRESSION ANALYSES FOR THE LOW-USE GROUP (DASS-21)

Variable	B	$\beta$	R	Adjusted R <sup>2</sup>	$\Delta R^2$
1. Gender	-01.76	0.006	0.112	0.012	0.012
Age	-0.093	-0.066			
Hours of WoW played per week	0.090	0.083			
2. Offline appraisal SS	-0.417	-0.247*	0.550	0.302	0.290**
Offline belonging SS	-0.527	-0.324**			
In-game appraisal SS	0.026	0.020			
In-game belonging SS	-0.085	-0.046			

Note: Betas presented are those at the last step of the analysis.  
\* $p < 0.05$ ; \*\* $p < 0.001$ .

results. The high-use group may have low levels of offline SS and high levels of negative psychological symptoms because they play WoW for such long periods of time. Alternatively, they may play WoW for 80 hours a week because of these conditions. Further examination of heavy users, using larger sample sizes, would allow more meaningful conclusions to be drawn concerning this group's lack of offline SS. Additionally, both groups were shown to derive some SS from their relationships with other players, although the regression analysis of the low-use group revealed that only offline SS significantly affected DASS-21 scores.

This research focused on the outcomes of SS within WoW. A related and important issue is how the meaning and rules of this community have formed. A theoretical perspective to analyze these social interactions, such as the lens of social interaction,<sup>19</sup> may provide insight into these aspects of community development.

MMOGs are a potential source of SS for millions of people around the world and could thus be used to promote player well-being. This may be of particular importance to a subsample of players who play MMOGs for considerably longer than their peers and have significantly lower levels of offline SS and higher levels of negative psychological symptoms. As well as providing an insight into the SS derived from MMOGs and its effects, this study provides a basis for future research into the psychological and social aspects of the rapidly expanding cultural phenomena of MMOGs.

#### Disclosure Statement

No competing financial interests exist.

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