



Real-world social support but not in-game social support is related to reduced depression and anxiety associated with problematic gaming

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HIGHLIGHTS

- Problematic gaming is negatively associated with real-world social support.
- Problematic gaming is positively associated with in-game social support.
- Real-world social support was negatively associated with depression and anxiety.
- In-game social support was not significantly associated with depression or anxiety.
- Problematic gamers should obtain real-world social support for mental health.

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ABSTRACT

Playing video games can become problematic, interfering with gamers' daily functioning. This problematic gaming is associated with negative mental health outcomes, such as depression and anxiety. Social support, provided in the real-world, can protect against mental health disorders such as depression and anxiety. However, previous research on gaming has found that real-world social support for gamers often decreases, while within-game social support increases. Importantly, it is currently unknown whether in-game social support can replace real-world social support in protecting problematic gamers from symptoms of depression and anxiety. To address this, we conducted an online survey ($n = 361$), recruiting participants from both a general university population and an online campus gaming (E-sports) group. We collected measures of problematic gaming, depression, anxiety, and both real-world and in-game social support, and then conducted a path analysis. In line with previous research, problematic gaming was significantly associated with decreased real-world social support and increased in-game social support. However, only real-world social support was then associated with reduced depression and anxiety, while in-game social support was unrelated to both. Problematic gaming also retained a significant direct effect on depression and anxiety. Maintaining real-world social support should be encouraged in the face of problematic gaming behaviors.

1. Introduction

Over 200 million people in the United States play video games, averaging 12 h per week (EEDAR, 2018). For most, video gaming is simply an enjoyable activity. For a small subset gaming can become problematic and interfere with daily functioning — paralleling substance use disorders (Griffiths, 2015). These individuals display pre-occupation with video games, and continue to play even when their gaming causes conflict in their lives. If they quit gaming they may experience withdrawal, and even relapse and start playing again. A

systematic review estimated 3% of the population displays gaming behavior (Mentzoni, Brunborg, & Molde, 2011). The World Health Organization (WHO) recently recognized gaming disorder (World Health Organization, 2018). However, this is an issue of open debate (Aarseth, Bean, & Boonen, 2017; Griffiths, Kuss, Lopez-Fernandez, & Pontes, 2017), and there is a need for more research on this topic.

Previous research has demonstrated an association between problematic gaming and negative mental health outcomes (Männikkö, Ruotsalainen, Miettunen, Pontes, & Kääräinen, 2020). Problematic gamers display increased depression and anxiety (Spada, Langston,

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Nikčević, & Moneta, 2008; Wei, Chen, Huang, & Bai, 2012), with various proposed mechanisms. Depression may arise from the contrast between poor real-world skills and high efficacy and skill in the gaming world (King & Delfabbro, 2016). Similarly, anxiety may be amplified by this reduction in real-world confidence, creating negative emotional states that impede real-life social interactions and task completion (Cole & Hooley, 2013). Importantly, another mechanism for these negative mental health outcomes could be the role of social support and the impact of problematic gaming on social support systems.

Strong social support, in the form of intimacy, affection, and assistance, has been consistently found to protect against negative mental health outcomes, including depression and anxiety (Dougall, Hyman, Hayward, McFeeley, & Baum, 2001; Hale, Hannum, & Espelage, 2005; Zimet, Dahlem, Zimet, & Farley, 1988). Social support can be provided through in-person interactions, such as with family members, significant others, and friends. Social support can also be provided through other communication platforms, such as the Internet and social media, although findings have been mixed with regard to the value of such mediated support (Leung, 2007; Shaw & Gant, 2004; Trepte, Deinlin, & Reinecke, 2015). Importantly, similar arguments have been made for video gaming — the often social nature of game play, online or offline, provides social support that gamers tend to perceive similarly to real-world social support (Cole & Griffiths, 2007; Trepte, Reinecke, & Juechems, 2012). Many online games mimic social networks (Cole & Griffiths, 2007), helping gamers cultivate online relationships with other players. Furthermore, in non-online games, social support can develop through online forums (Kaczmarek & Drązkowski, 2014). However, game-based social support may sometimes result in a decline in offline, real-world social interaction (Lemmens, Valkenburg, & Peter, 2011). There has been little research on the downstream consequences of in-game social support, especially with regard to mental health outcomes such as depression and anxiety. It could be that gamers receive in-game social support, but does this have the same beneficial effects on mental health as real-world social support?

Social support is hypothesized to be helpful due to some combination of concrete instrumental aid, emotional support, and self-esteem enhancement (Zimet et al., 1988). It is possible that in-game social support, while perceived by gamers to be similar, may not be as effective as real-world social support in providing things like concrete aid and emotional support, reducing its ability to protect gamers from depression and anxiety. To note, while much of the above-mentioned debate has centered on clinical levels of problematic gaming, measures can identify problematic use that does not necessarily meet the threshold for a mental health diagnosis, but are nonetheless concerning (van Holst, Lemmens, Valkenburg, Veltman, & Goudriaan, 2012). We used this continuous conceptualization of problematic gaming in the present study.

2. Methodology

2.1. Sample

Video gamers ($n = 361$, 41% female, median age 21 years) were recruited for an online Qualtrics survey. The majority ($n = 320$) from a student pool at Michigan State University who received course credit for participation. A second, simultaneous sample ($n = 41$) was recruited from an E-sports association at the same university to increase gaming behavior variability. These individuals were incentivized using a raffle for four \$25 Amazon gift cards. Sample source was included as a covariate in analyses. Participants provided informed consent, and study procedures were approved by the university Institutional Review Board.

2.2. Measures

2.2.1. Problematic gaming

Problematic gaming was measured by modifying the six-item problematic series watching scale (English version; Orosz, Bőthe, & Tóth-Király, 2016). In each item, we replaced “series watching” with “video game playing”, and we provided the prompt “By video game playing we mean all kinds of game content that can be played on any device, including but not limited to television, computer, tablet, or smartphone. Answer each of the 6 questions by selecting one response that best describes you (scale ranging from 1 “never” to 5 “always”). During the last year, how often have you...” A sample item is “spent more time playing video games than initially intended” ($M = 2.18$, $SD = 0.80$, range = 1 to 5, Cronbach $\alpha = 0.84$). The mean for the sample is lower than the midpoint of the scale; however, the range covering the entirety of the scale demonstrates that some participants reported high levels of problematic gaming. Of note, non-clinical levels of problematic gaming can be concerning for health (van Holst et al., 2012).

2.2.2. Social support (real world)

Real-world social support was measured with the 12-item Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Participants were prompted with “Please rate your agreement with the following statements about your real-life, in-person relationships” (scale ranging from 1 “strongly disagree” to 7 “strongly agree”). A sample item is “I can count on my friends when things go wrong” ($M = 5.66$, $SD = 1.17$, Cronbach $\alpha = 0.94$).

2.2.3. Social support (in game)

In-game social support was assessed with the same scale as real-world social support, but the prompt stated “Please rate your agreement with the following statements about relationships you may have made with other people in the video game environment.” Where relevant, the term “in-game” was added to the items, for example, “I can count on my in-game friends when things go wrong” ($M = 3.87$, $SD = 1.56$, Cronbach $\alpha = 0.96$).

2.2.4. Depression

Depression was measured using the 8-item short form of the PROMIS depression scale (Pilkonis, Choi, & Reise, 2011). It included the prompt, “How often have you felt the following in the past 7 days?” (scale ranging from 1 “never” to 5 “always”). A sample item is “I felt hopeless” ($M = 2.51$, $SD = 0.93$, Cronbach $\alpha = 0.94$).

2.2.5. Anxiety

Anxiety was measured using the 8-item short form of the PROMIS anxiety scale (Pilkonis et al., 2011). It included the prompt, “How often have you felt the following in the past 7 days?” (scale ranging from 1 “never” to 5 “always”). A sample item is “I felt fearful” ($M = 2.16$, $SD = 0.89$, Cronbach $\alpha = 0.93$).

2.3. Statistical analysis

Hypotheses were tested using a saturated path model [Fig. 1] with the sem command in Stata 14. Problematic gaming was the exogenous predictor variable, with depression and anxiety as the distal outcomes. Both types of social support were included as mediators. The direct effect of problematic gaming on depression and anxiety was also included. The error terms of depression and anxiety were allowed to correlate, as were the error terms for real-world and in-game social support. Sample source, age, and sex were included as a covariate predicting all endogenous variables. Indirect effects were estimated using the nlcom command and 10,000 bias-corrected bootstrap samples. All reported coefficients are unstandardized.

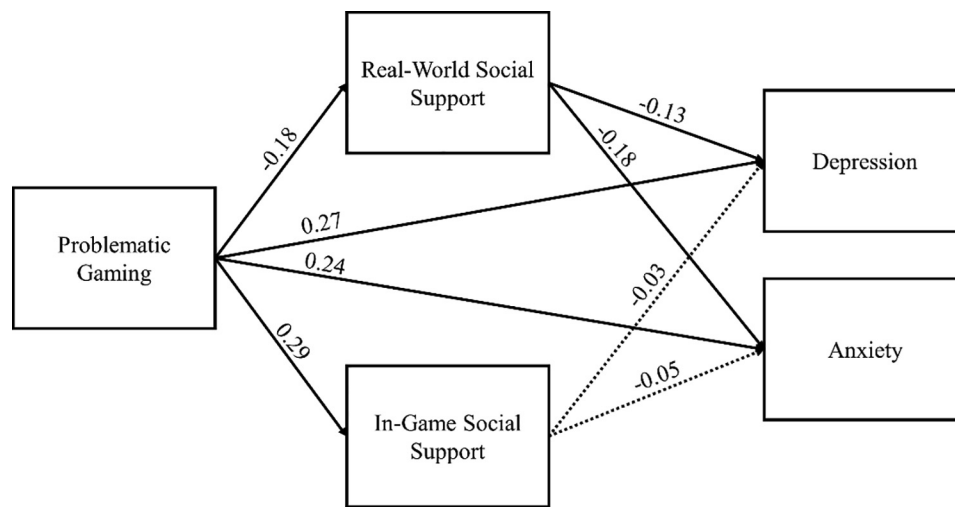


Fig. 1. Path model results. Note: coefficients reported are unstandardized. Black solid lines denote significant paths at $p < .05$; dotted lines indicate non-significant paths at $p > .05$.

3. Results

Statistical results can be found in Table 1. Problematic gaming was significantly associated with both decreased real-world social support and increased in-game social support. Real-world social support was significantly associated with decreased depression and anxiety, replicating previous work suggesting social support is protective against these issues (Zimet et al., 1988). In-game social support, however, was not significantly associated with either depression or anxiety, indicating that it is not protective in the same way as real-world support. The indirect effects of problematic gaming on both depression and anxiety were significant and positive when mediated by real-world social support, indicating that one mechanism by which problematic gaming may be associated with depression and anxiety is through decreased real-world social support. There was no significant indirect effect when in-game social support was the mediator. Problematic gaming also continued to have a significant and positive direct effect on depression and anxiety, indicating that decreased real-world social support is not the only likely mechanism to explain these relationships.

4. Discussion

The present study replicated previous research on problematic gaming and mental health (Männikkö et al., 2020), demonstrating a positive relationship between problematic gaming and symptoms of depression and anxiety. It also replicated previous findings that gamers perceive high levels of in-game social support (Lemmens et al., 2011).

As suggested by previous research (e.g., Leung, 2007), we demonstrated that real-world social support is a possible protective factor against depression and anxiety. Importantly however, our findings reveal a difference between real-world and in-game social support in terms of their relationships to depression and anxiety. In-game social support did not have the same negative relationship with depression and anxiety that real-world social support has. Notably, these effects were small – similar in size to related domains (e.g., internet use and depression, Huang, 2010) – underscoring that problematic gaming is only one aspect of behavior that may be related to mental health.

While in-game social support in the form of game-based interaction, gaming communities, message boards, and social media have become typical aspects of the gaming experience, and some gamers may perceive this support to be relatively equivalent to real-world support (Cole & Griffiths, 2007; Trepte et al., 2012), in-game social support does not confer the same benefits as real-world social support, specifically with regard to the tested mental health measures. In addition, it appears that social support received in-game has different relevance to mental health than other types of social support received online. For example, social support provided over the Internet (e.g., forums) has been shown to protect against detrimental mental health conditions (e.g., Shaw & Gant, 2004). Future research will likely examine different types of online social support to better understand relationships with mental health.

Our study includes some limitations. First, our data are cross-sectional; therefore causality cannot be established. There is evidence suggesting mental health issues such as depression may have reciprocal

Table 1 Model regression results predicting social support (real world and in game), depression, and anxiety.

	Social support (real world)		Social support (in game)		Depression		Anxiety	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI
Problematic Gaming	-0.12	-0.22, -0.02	0.14	0.04, 0.24	0.23	0.13, 0.33	0.22	0.13, 0.32
Age	0.04	-0.06, 0.14	0.01	-0.09, 0.11	-0.02	-0.12, 0.08	-0.04	-0.14, 0.06
Sex	0.10	-0.01, 0.20	-0.03	-0.14, 0.07	0.26	0.17, 0.36	0.15	0.05, 0.24
Sample	-0.14	-0.24, -0.03	0.12	0.02, 0.23	0.09	-0.01, 0.20	0.10	-0.00, 0.20
Social support (real world)	-	-	-	-	-0.17	-0.27, -0.07	-0.24	-0.34, -0.13
Social support (in game)	-	-	-	-	-0.06	-0.16, 0.05	-0.09	-0.19, 0.01
R ²	0.06		0.04		0.15		0.16	
<i>Indirect effects of Problematic Gaming</i>					<i>b</i>	95% CI	<i>b</i>	95% CI
Social support (real world)	-		-		0.02	0.003, 0.06	0.03	0.005, 0.07
Social support(in game)	-		-		-0.01	-0.03, 0.01	-0.01	-0.04, 0.000

Note: Coefficients from regression are standardized, while coefficients for indirect effects are unstandardized; indirect effects of problematic gaming on depression and anxiety through the mediators of social support in the real world and social support in game are estimated with 10,000 bias-corrected bootstrap samples.

relationships with screen media use, such that depression and media are mutually reinforcing (Houghton et al., 2018). Future research should include longitudinal and experimental (e.g., intervention) designs to better establish causality. Second, we recruited a convenience sample, so although both the general college student population and the members of the gaming group provide reasonable variability in gaming behavior, the results may not be generalizable to a wider population. Third, the online social support scale was adapted from the in-person scale, and although it demonstrated reliability, it hasn't been validated for use in this way, so interpretation of our findings should be made with caution. Finally, although our results demonstrate a difference between in-game and real-world social support on depression and anxiety, they cannot speak to a mechanism for this difference. One possibility is that in-game relationships may be more superficial, based on one shared interest in solving gaming problems, and therefore lack the ability to assist in real world problems – thus having reduced utility in the concrete aid and emotional support aspects of social support. Future research should attempt to elucidate what distinguishes real-world from in-game social support in this context.

In sum, it appears that problematic gaming is associated with reduced real-world social support, which may be replaced by in-game social support. Previous research suggests gamers perceive in-game social support to be of similar quality to real world support (Cole & Griffiths, 2007; Trepte et al., 2012); however, our results suggest that in-game social support does not have the association with reduced depression and anxiety that real-world social support provides. Therefore, maintaining real-world social support should be encouraged in the face of problematic gaming behaviors, as it may be different in quality from in game social support.

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Contributors

All authors designed the study. M.E. and D.M. supervised the study. S.M.T. collected data. M.E. conducted statistical analyses. All authors wrote the manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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