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Gamers' and non-gamers' perspectives on the development of problematic video game play

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Abstract

Gaming Disorder was recently included in the 11th Edition of the *International Classification of Diseases* and Internet Gaming Disorder may be introduced in the sixth edition of *The Diagnostic and Statistical Manual*. Much is not understood about how problems with video games develop. This qualitative study aimed to better understand the development of problematic gaming through focus groups. Eleven young adult "frequent gamers," twelve young adult "non-frequent or non-gamers," and five older adult "non-gamers" discussed vulnerabilities and risk factors of problematic gaming. Participants across all groups believed that problematic gaming developed when people used video games as a primary means of meeting basic psychological needs that were unsatisfied, thwarted, or blocked outside of video games. Frequent and non-frequent gamers, compared to older adult non-gamers, were more likely to view video games as a healthy way to meet basic psychological needs and less likely to stereotype gamers. Video games are equipped to meet basic psychological needs for autonomy, competence, and relatedness. That is, gamers often experience a sense of agency, skill, and connection to others when playing video games. However, problematic gaming may develop when people with unmet psychological needs rely exclusively on video games to meet them. Treatment and prevention approaches to problematic gaming can benefit from greater attention to helping at risk individuals meet needs for autonomy, competence, and relatedness outside of video games.

Keywords Internet gaming disorder · Gaming disorder · Self-determination theory · Behavioral addictions · Video games · Problematic gaming

In Western countries, approximately 1.6% to 4.6% of individuals experience psychological problems related to video game play (Fam, 2018; Rehbein et al., 2015; Ünübol et al., 2020). In 2013, Internet Gaming Disorder (IGD) was included in Section III of the *Diagnostic and Statistical Manual* (DSM-5; American Psychiatric Association, 2013) as a potential behavioral addiction. Gaming Disorder (GD) was recently recognized as an addiction by the World Health Organization (WHO) in the eleventh edition of the *International Classification of Diseases* (World Health Organization, 2020). Some substance use disorder (SUD) symptoms such as loss of control, gaming to escape negative moods, involvement despite negative consequences, and giving up activities are common in IGD and GD (Deleuze et al., 2017; Wichstrøm et al., 2019). Other SUD symptoms, like craving, tolerance, and withdrawal have also been observed, but they do not reliably differentiate normal and dysfunctional video game play (King et al., 2016, 2017; Petry et al., 2015). For these and other reasons discussed below, the status of problematic gaming (PG; which we use throughout this paper to refer to GD and IGD) as an addictive disorder is controversial.

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Controversy regarding the status of problematic gaming as a mental disorder

One potential threat to the validity of PG (as an addictive disorder) is confirmatory research (Bean et al., 2017; Van Rooij et al., 2018). According to Billieux et al. (2015), confirmatory research is a three-step process whereby: (1) PG is a priori considered an addiction, (2) PG assessments are adapted from addiction criteria, and (3) studies explore risk and protective factors using these addiction-based assessments as outcome measures. This practice is thought to result in a superficial understanding of PG because only similarities to addictions are considered and differences are ignored. Other researchers argue confirmatory research is not problematic. According to Griffiths (2017), studies should test hypotheses that PG exhibits core components of addictive disorders (e.g., salience, mood modification, tolerance, withdrawal, conflict, relapse) to determine if it should be understood and treated as one.

In response to the WHO decision to include Gaming Disorder in the ICD-11, Division 46 of the American Psychological Association released a statement questioning the validity of PG diagnoses on several grounds, including: highly variable prevalence of IGD/GD between studies, low diagnostic stability, high rates of spontaneous remission, lack of consensus about salient symptoms between scholars, and concerns that excessive video game play stems from anxiety and depression rather than bona fide addiction to video games (Society for Media Psychology and Technology and Special Interest Group in the Media, the Arts and Cyberpsychology, 2018). Other researchers have raised concerns about PG diagnoses because they lack a discrete addictive object (Quandt, 2017). All chemical addictions have a clear object: a specific drug (Shaffer et al., 2004). And even gambling disorder has an object: money. But what are people addicted to video games actually addicted to? Specific video games or game genres, a feeling of achievement from beating difficult enemies, compelling storylines, a sense of comfort from plunging into an immersive fantasy world, feeling connected to other gamers, or something else?

Given these concerns, it is unsurprising there is a lack of consensus regarding whether "video game addiction" is a diagnosable mental disorder. Ferguson and Colwell (2020) conducted a survey of 214 PG researchers and found while 60% considered "video game addiction" a legitimate disorder, less than half believed DSM-5 criteria for IGD were reliable or valid indicators of it. Researchers also expressed concerns about the utility of PG diagnoses: over half believed IGD and GD diagnoses would lead children with healthy video game involvement to be pathologized and nearly half believed PG diagnoses "may do more harm than good."

Currently, consensus among PG researchers is that some people who play video games excessively tend to experience psychological distress and associated problems (Ferguson & Colwell, 2020). However, to qualify as a mental disorder, PG itself would need to lead to distress or dysfunction (American Psychiatric Association, 2013). In a recent study, Przybylski and Weinstein (2019) observed the variability in psychological dysfunction explained by PG was only 0.3% while the percent variability in psychological dysfunction explained by unmet psychological needs was approximately 23%. In other words, while problematic gamers may experience psychological dysfunction, it may stem from unmet psychological needs rather than their involvement with video games.

Basic psychological needs and their relation to healthy and problematic gaming

Researchers have studied relations between psychological needs and video game play for over a decade (Adachi & Willoughby, 2017; Oliver et al., 2016; Oswald et al., 2014; Przybylski et al., 2010; Yee, 2006). Self-Determination Theory (SDT; Deci & Ryan, 2012) is a popular framework for understanding psychological needs that has been applied to video games and gaming (Przybylski et al., 2010). According to SDT, people will have the most intrinsic motivation for activities that satisfy three basic psychological needs: autonomy, competence, and relatedness. *Autonomy* involves feelings of agency and freedom to act and influence one's environment, *competence* involves feeling confident and skillful, and *relatedness* involves feeling connected to others (Deci & Ryan, 2012). Contemporary video games, with realistic graphics, immersive and open worlds, endless opportunities for advancement and skill building, and competitive or cooperative online multiplayer modes seem well-suited to meet players' needs for autonomy, competence, and relatedness. In fact, Przybylski et al. (2010), across a series of studies, found the more video games satisfied autonomy, competence, and relatedness needs, the more people tended to play them. Yee and Sng (2022) interviewed players of the popular social simulation video game *Animal Crossing: New Horizons*, who described how the game enabled them to create and control their environment (autonomy), achieve meaningful goals (competence), and connect with other players (relatedness). Participants in the Yee and Sng (2022) study also discussed how meeting these needs through video games supported their psychological well-being amidst the first wave of the COVID-19 pandemic.

While video games are capable of meeting basic psychological needs, problems may arise when people rely on video games as their primary method for meeting them. Need frustration or *thwarted needs* occurs when a person's ability to feel autonomous, competent, and connected in their day-to-day lives is stalled or blocked. This may occur, for example, if one finds little enjoyment in day-to-day activities, struggles athletically or academically, or has few friends or supportive family members. Thwarted needs are a risk factor for PG (Mills & Allen, 2020; T'ng et al., 2022). In contrast, a person's ability to meet psychological needs outside of video games, or *need satisfaction*, protects against PG (Mills & Allen, 2020).

The present study

This paper describes a qualitative study exploring the development of PG using SDT as a theoretical framework. Billieux et al. (2015) have called for qualitative studies to explore the development and maintenance of PG from non-addictive perspectives. SDT provides a lens through which to understand PG and problematic gamers' psychological concerns. We elicited perceptions and experiences of PG from focus groups comprised of young adult frequent gamers, young adult non-frequent gamers, and older adult non-gamers. Sampling these groups enabled us to determine how age and gaming experience influenced participants' beliefs about the capability of video games to satisfy basic psychological needs, how PG develops, and the role of unmet and thwarted needs in the development of PG. Since groups had differing levels of experience with video games, themes were considered most credible when they emerged across all groups. Our research questions were:

1. What are the primary motives and needs that drive video gaming and PG?
2. To what extent do motives for gaming reflect attempts to satisfy needs for autonomy, competence, or relatedness?
3. To what extent do motives for PG reflect thwarted needs for autonomy, competence, or relatedness outside of video games?
4. Is there consensus among people with different levels of video gaming experience regarding the role of autonomy, competence, and relatedness in gaming and PG?

Methods

Participants and procedure

This study, conducted at the university's medical center in the midwestern United States, was approved by their Institutional Review Board. A flyer advertising the study was distributed throughout the local and university community. The flyer invited potential subjects to participate in focus groups on online gaming, explained that participants did not need to have experience playing games to participate, and provided study contact information. Individuals were provided a link to an online survey to complete a screening and consent process which included questions about demographics and gaming frequency.

Participants were assigned to one of three focus group conditions according to gaming frequency and age. Six hours per week was used as the cut-off point for frequent versus non-frequent gamers, since this was the average amount of weekly hours adults in the United States spent gaming during the data collection period (Nielsen Holdings, 2018). Young adults who played video games for six or less hours per week were classified as *non-frequent gamers* (NFG), young adults who played video games for more than six hours per week were classified as *frequent gamers* (FG), and older adults who did not report playing video games were classified as *adult non-gamers* (ANG). One participant, despite gaming less than six hours per week, was assigned to the FG condition because they reported gaming for 20 hours over a period of two days every month, as well as extensive interest in video games and reported past problems associated with video game play. Participants were compensated with $15 electronic Amazon gift cards for completing online surveys and attending focus groups.

Participants attended a single focus group corresponding with their assigned condition. Four NFG groups and three FG groups were conducted at university facilities and one ANG focus group was conducted at a university medical center. Groups ranged in size from two to five participants and were approximately 90 minutes in length. All groups were facilitated by a trained member of the research team, supervised by a licensed PhD psychologist (BSL). At the outset of group, the facilitator informed participants of the purpose of the study: "to capture attitudes about video gaming."

The facilitator followed a semi-structured topic guide designed to elicit participants' perceptions and experiences of PG. The topic guide was designed by CMM and BSL, based on the PG literature (e.g., motives for playing video games, how problems develop, indicators of problems), and opinions regarding these areas that could conceivably vary between people with different experiences regarding video games. Representative questions include: "What motivates people to play internet games?" and "What distinguishes healthy from unhealthy gaming?" (See Fig. 1 for the full semi-structured interview guide.)

Audio was recorded using Apple Voice Memos for iOS and MacOS. Immediately after focus groups, recordings were transferred to an encrypted server for storage and local

Fig. 1 Semi-structured interview guide

1. What is your definition of a gamer?
2. What motivates people to play internet games?
3. To what extent do you think gaming is stigmatized?
4. What distinguishes healthy from unhealthy gaming?
5. If you found yourself dating a gamer, how tolerant would you be of their internet gaming?
6. What boundaries for your children would you set around internet games?
7. What are your thoughts about classifying excessive gaming as a mental disorder?
8. Of all the things we have talked about today, what was the most important thing that was said?

audio files were deleted. The facilitator summarized salient themes in field notes after each group. Recruitment for focus groups ended when saturation of themes was reached (i.e., when no new themes emerged between groups).

Data analysis

Descriptive statistics were analyzed in IBM SPSS. Audio recordings were transcribed verbatim and uploaded into MaxQDA for qualitative coding. Based on reviews of all transcriptions, members of the research team (CMM and BSL) decided SDT (Deci & Ryan, 2012; Przybylski et al., 2010) provided a comprehensive framework for analyzing focus group transcriptions. Thus, deductive qualitative analysis was used as the research paradigm for this study. Deductive qualitative analysis differs from some qualitative research paradigms in that coding is guided by an explicit theory (Gilgun, 2019). Meaningful units of responses were initially coded according to themes reflecting basic psychological needs described by SDT: (1) autonomy, (2) competence, and (3) relatedness. Responses within these components were then coded as examples of need satisfaction (basic needs met through video games) or thwarted needs (difficulty meeting basic needs outside of gaming). The first author conducted coding to ensure consistency across focus group transcriptions. The research team met regularly to review codes and determine if themes accurately reflected participants' perceptions of PG.

Results

Fifty-six individuals responded to the study flyer. Nine of these individuals did not complete the online survey. Nineteen individuals completed the online survey and were assigned to a focus group but did not attend. The remaining 28 participants who completed surveys and attended one of eight in-person focus groups were included in the final sample for data analysis.

Demographics

FGs ($n = 11$) were between 18 and 26 years old ($M = 20.5$; $SD = 2.6$), NFGs ($n = 12$) were between 18 and 29 years old ($M = 20.4$; $SD = 3.2$), and ANGs ($n = 5$) were between 46 and 72 years old ($M = 61.4$; $SD = 9.5$). FGs were predominately male (64%), while NFGs and ANGs were predominately female (67% and 60% respectively). That a greater proportion of FGs were men parallels findings they tend to play video games more often than women (Chen et al., 2018).

FGs played video games between 5 and 35 hours per week ($M = 21.1$, $SD = 5.6$); one FG reported gaming once per month over the course of a single weekend for approximately 20 hours, hence the minimum amount of time spent gaming for FGs is 5 hours (20 hours divided by 4 weeks). NFGs played video games between zero and six hours per week ($M = 1.3$, $SD = 2.1$). None of the ANG group reported playing video games according to online surveys. However, in focus group sessions, some ANGs reported playing flight simulators, computer solitaire, and mobile puzzle games. We hypothesize ANGs may not have considered these video games. Demographics are reported in Table 1.

Participants exhibited various motives for joining the present study. Many FGs were eager to describe their experiences and knowledge of video games. NFGs and ANGs often knew family or friends who identified as gamers or appeared to exhibit problems related to video games. Despite differences in motives for participation, consistent themes regarding PG arose across the three groups. For brevity and readability, some participants' responses are paraphrased. However, the meaning of participants'

Table 1 Demographics of frequent gamers, non-frequent gamers, and adult non-gamers

Variable	Frequent gamers ($n=11$)	Non-frequent gamers ($n=12$)	Adult non-gamers ($n=5$)
Gaming (hours per week)			
M (*SD*)	21.1 (5.6)	1.3 (2.1)	0
Min–Max	5–35	0–6	0
Age			
M (*SD*)	20.5 (2.6)	20.4 (3.2)	61.4 (9.5)
Range	18–26	18–29	46–72
Gender	*n (%)*		
Male	7 (64)	4 (33)	2 (40)
Female	3 (27)	8 (67)	3 (60)
Transgender	1 (9)	-	-
Education			
Some college	-	-	1 (20)
(*In-progress*)	10 (91)	10 (83)	-
Bachelor's Degree	1 (9)	2 (17)	1 (20)
Master's Degree	-	-	2 (40)
Doctoral Degree	-	-	1 (20)

responses was not altered. We identify participants by noting their condition and group in brackets alongside quoted utterances (e.g., [NFG3-P2] indicates the quote belongs to participant two of the third non-frequent gamer focus group). Participants' responses are presented in sections pertaining to each SDT need. Within each section, emergent themes regarding needs satisfaction and healthy video game play as well as thwarted needs and PG are summarized.

Autonomy

Participants, especially FGs and NFGs, believed video games could provide players a sense of freedom and agency. One FG noted that compared to passively watching sports, video games were an active form of entertainment: *"Video games appeal to me because I'm influencing what the characters do, unlike sports, where I'm watching a team choose whether to throw a pass."* [FG2-P1]. An NFG participant shared a similar perspective: *"With video games, you're thinking about it, you're involved, you're doing things—with TV you're just taking in information."* [NFG4-P2]. A World of Warcraft gamer described how setting goals and making plans to achieve them motivated continued play: *"My desk is covered in sticky notes with my plans and goals for the game. I want to get this item, but to do that first I need to level up and do this, that, and this, and then I can get that item. That's part of my fun. I have a goal, and I want to do all those things to get it."* [FG1-P1].

Like FGs and NFGs, ANGs recognized video games could satisfy autonomy needs. However, ANGs tended to imply this motive was based in thwarted autonomy: *"When I think of a gamer, it's a young guy, maybe they are not active or not in sports. They want to be active and engaged, and maybe this is a way for them."* [ANG-P5]. Another ANG shared how they believed a young adult they knew played video games to cope with depression, which often involves low levels of perceived autonomy: *"He is avoiding life. He isn't trying to get a job, and I think he is depressed."* [ANG-P2]. While ANGs often stereotyped gamers as struggling with thwarted autonomy, FG and NFG participants were less stereotyped in their views about gamers. Nonetheless, they described how PG could occur when people play video games to avoid other life responsibilities that do not provide the same sense of autonomy as video games. For example, one FG said: *"If I don't want to do something I will often use video games as an escape. I will spend too much time playing video games and not enough time doing what I need to do. The longer I do it the more anxiety I get."* [FG2-P1]. Participants also discussed how PG could undermine future opportunities to meet autonomy needs: *"When I first met my friend three years ago, he really loved his job, and now he's struggling to focus at work because he's always trying to play games on the job."* [NFG3-P2].

Competence

Competence was considered a major motive for playing video games. One FG shared: *"I derive most of my enjoyment out of being good at a game. If I'm playing a game and I'm not good at it, I don't tend to play it as much because the sense of achievement isn't there. I'm drawn back to games that are challenging but I can do well."* [FG2-P1]. Some NFG participants described how they were motivated to play games that satisfied their need for competence: *"Having a competitive spirit motivates me*

to play certain types of games. I play Overwatch and I'd rather play the competitive mode. The thrill of the competition is entertaining to me." [NFG4-P3]. Among FGs, competence needs were associated with perceived recognition from other gamers: *"Achievements are an esteem booster. I wouldn't be proud of my achievements outside of the gaming community. But within the community, you could boast of your skills—you would have a certain amount of self-esteem in that sense."* [FG2-P3].

For some participants, competence needs drove an obsessional style of play, particularly when in game achievements were linked with self-worth: *"If I have a really crappy game, then sometimes I'll want to play until I win. I start to think 'one more, just one more.' Then I'll play a good game, and be really happy with what I did, and feel really good about myself. The next thought will be 'I want to play another game so I can keep feeling good about myself.' It can snowball."* [FG3-P1]. It is possible individuals like this struggle feeling competent outside of video games. Indeed, this same participant later described how they played video games to feel better about themselves when they were depressed: *"When I feel depressed, I tend to play video games more. But never because I want to play video games, more like a medication. Beating a hard boss makes me feel good about myself."* [FG3-P1]. ANG participants also described how gamers with thwarted competence needs might be attracted to video games to cope with low self-worth (albeit in a stigmatizing manner): *"Somebody who views themselves negatively might develop a persona in games, they can be the person they want to be in the real world online. Nobody can see that their unimportant and dumpy—they're Thor online."* [ANG-P5].

Relatedness

Of all SDT needs, relatedness was mentioned most often across focus groups. FGs and NFGs described how playing video games helped them feel connected to family members, friends, or online communities:

> *"My dad actually is a gamer too, so we bond around video games."* [FG1-P2].
> *"I knew people that used to game together in high school; they moved to different states, got married, and grew up. They still get together to game online and chat."* [NF1-P2].
> *"There's a lot of people out there that play the same game as you, which provides a sense of community. You can coordinate strategies in the game, but you can also have conversations outside of the game on Discord and Twitch."* [NFG2-P1].
> *"My boyfriend is going to college here, but his best friend is still in Wichita, so every time they meet up, they play video games for 8 hours straight to re-connect."* [NFG3-P1].

FGs and NFGs provided examples of how in some cases, playing video games could support or lead to meaningful real-world relationships:

> *"I actually met someone through an online role-playing game. We're still really good friends. She came and visited me over winter break."* [FG1-P4].
> *"Video games helped me make friends, especially at a young age. My friendship with my best friend developed from our discussions about games."* [FG2-P3].
> *"I know people who have made really good friends through games, to the point where they meet in real life and are in their wedding party."* [NFG1-P1].

However, participants acknowledged this was an anomaly and that most in game relationships could not provide a meaningful sense of connection:

> *"If the relationship revolves entirely around the game, then it's not as deep as a relationship in real life."* [FG2-P3].
> *"Gamers may see video games as social, but they aren't actually social because you're not face to face."* [ANG-P5].

Some participants elaborated on how failing to recognize the psuedosocial nature of in-game relationships could lead to PG: *"Unhealthy gaming can happen when you get too into the characters—like you start to see them as real people. You have to understand these characters are fictional. They cannot come to you, no matter how bad you want it."* [NFG2-P1]. An FG described how relying on video games for social connection might lead to social skills deficits: *"Even though there's a social aspect to video games, it's not face-to-face. Not having physical interactions with people can negatively impact how you relate to them."* [FG1-P3]. Across groups, participants hypothesized how people with depression or interpersonal problems could experience thwarted relatedness needs that they avoid through excessive video game play:

> *"My friend has said he wants to quit playing video games but he can't. He told me he and his girlfriend were having issues and he played video games to avoid thinking about these issues and interacting with other people."* [NFG3-P2].
> *"People with poor social skills might get picked on or be considered uncool. They might prefer to be alone. When console games started coming out you could just hide in your room and play video games and not have to deal with people."* [FG3-P1].
> *"My ex-partner's son, the one with depression, played video games excessively. He didn't have to go out and meet or be with people, he had this online virtual*

world. I think he was escaping being out in the world and having awkwardness with girls or conflicts with friends." [ANG-P2].

Discussion

The label, "problematic gaming" (as a mental health problem), is controversial (Aarseth et al., 2017; Ferguson & Colwell, 2020; Ferguson et al., 2020). Many studies of PG have examined how signs and symptoms of PG are similar to substance use and gambling disorders (Van Rooij et al., 2018). However, this body of work has failed to provide convincing evidence that PG is an addiction. In fact, despite over a decade of research on PG, IGD remains in Section III (conditions for further study) of the recently released technical revision to the DSM-5 (American Psychiatric Association, 2022). Some symptoms of addictive disorders, like loss of control and giving up activities, are reliable indicators of PG; other symptoms such as tolerance, craving, and withdrawal are not (King et al., 2016, 2017; Petry et al., 2015). Researchers have speculated that PG may not be a unique mental health disorder because it exhibits poor diagnostic stability and high rates of spontaneous remission and is rarely observed in the absence of depression, social anxiety, or other psychological problems (Society for Media Psychology and Technology and Special Interest Group in the Media, the Arts and Cyberpsychology, 2018). Additionally, psychological dysfunction experienced by people with PG seems to be more strongly associated with unmet psychological needs rather than excessive video game play itself (Przybylski & Weinstein, 2019). Taken together, these concerns call into question the status of PG as an addictive disorder and a mental disorder more generally. Still, researchers recognize that problematic gamers experience psychological distress and dysfunction (Ferguson & Colwell, 2020). As noted earlier, Billieux et al. (2015) have called for more qualitative studies into the development and maintenance of PG from non-addictive perspectives.

The aim of this qualitative study was to better understand the development and maintenance of PG from an SDT lens. We were interested in the extent to which video games meet basic psychological needs (need satisfaction) and whether problematic gamers turn to video games when these needs are unmet in other life domains (thwarted needs). We asked focus groups of frequent gamers, non-frequent gamers, and non-gaming adults to share their experiences and perceptions of PG, including vulnerabilities and motives that might differentiate healthy and unhealthy video game play. Sampling three unique groups allowed for probing differences in perceptions of video games and PG between individuals with differing levels of gaming experience. ANG participants were more likely to stigmatize and stereotype gamers (e.g., as single, male, and lonely). ANG participants were also more likely to pathologize healthy gaming and discount video games as an avenue for meeting psychological needs. However, FGs, NFGs, and ANGs agreed people could develop PG when they rely mostly on video games to satisfy unmet psychological needs.

Video games can meet basic psychological needs

We found that FGs and NFGs, more so than ANGs, believed video games could meet needs for autonomy, competence, and relatedness. Regarding autonomy needs, FG and NFG participants noted video games, as opposed to other forms of entertainment (e.g., watching sports), enable people to be active decision-makers and influence outcomes. These participants also shared how gamers could satisfy competence needs by defeating difficult enemies, earning achievements, improving their performance, and competing against other players. FG and NFG participants also believed video games could meet relatedness needs when they provided a means for friends and family to bond or when in-game relationships transitioned into the real world. Findings from this study resemble results of other qualitative studies showing people are motivated to play video games to experience a sense of control, achievement, and connection (Adachi & Willoughby, 2017; Oliver et al., 2016; Oswald et al., 2014; Przybylski et al., 2010; Yee & Sng, 2022). However, the qualitative literature on SDT and video games has tended to focus on healthy gaming. A unique contribution of this qualitative study was the focus on thwarted psychological needs and PG.

Thwarted autonomy, competence, and relatedness needs may drive problematic gaming

While participants believed video games satisfied basic psychological needs, they also believed PG could develop when gamers use video games to meet needs for autonomy, competence, and relatedness that they fail to meet outside of video games. A common theme was that problematic gamers play video games to escape anxiety associated with other responsibilities, which could reflect attempts to cope with thwarted autonomy. If a person considers their academic or vocational responsibilities unfulfilling or inconsequential, they might turn to video games to experience their choices and actions as meaningful and impactful. Another theme was that individuals who may not perceive themselves as competent (due to depression or low self-esteem) might use video games to bolster feelings of mastery and self-worth. Participants also described how PG might develop through excessive reliance on video games to distract from painful feelings stemming from thwarted relatedness needs associated with depression and social anxiety. Taken collectively,

results of this qualitative study resemble quantitative work by Allen and Anderson (2018) showing PG symptoms are highest when real-world need satisfaction is low and need satisfaction through video games is high.

In addition to thwarted psychological needs, it was common for participants to speculate that depression, social anxiety, and other mental health problems contributed to PG. Longitudinal studies show mental health problems such as attentional difficulties, depression, emotion dysregulation, low self-esteem, and social anxiety are risk factors for developing IGD later in life (Peeters et al., 2018; Wang et al., 2021; Wartberg et al., 2019; Wichstrøm et al., 2019). Difficulties meeting psychological needs and mental health problems may collectively increase risk for PG. Scerri et al. (2019) observed in an adult sample that low need satisfaction predicted increased depression and lower self-esteem, which in turn, predicted IGD severity.

Participants' responses about thwarted psychological needs and PG echo quantitative findings on risk factors of PG. Warburton et al. (2022) observed among adolescents, PG was most strongly predicted by social exclusion, low levels of self-control and perceived control over one's environment. Respectively, these risk factors resemble SDT needs for relatedness, competence, and autonomy. In another study with a large nationally representative sample of European adolescent gamers ($n = 7865$), those most likely to be diagnosed with IGD exhibited lower levels of perceived competence and higher levels of social problems (unmet relatedness) compared to non-problem gamers (Colder Carras & Kardefelt-Winther, 2018).

Treatment and prevention of problematic gaming using Self-Determination Theory

The number of people seeking therapy for problems related to video games is rising (Cade & Gates, 2017), so it seems reasonable that many clinicians consider PG an addiction. However, when some therapists view PG as an addictive disorder they may focus on reducing problematic gamers' time spent gaming and overlook their unmet psychological needs. As mentioned previously, variance in problematic gamers' psychological dysfunction is explained more by unmet psychological needs (23%) than excessive gaming (0.3%) (Przybylski & Weinstein, 2019). This finding and responses from focus group participants suggest problematic gamers may benefit when therapists help them learn coping skills and social skills to meet psychological needs, in addition to helping them reduce their time spent gaming.

Conceptualizing PG from an SDT perspective has the potential to inform PG prevention. Existing prevention strategies have focused mostly on reducing time spent playing video games using time limits, forced shutdowns, and warning messages about the "addictive potential" of video games (King et al., 2018; Long et al., 2022). Time spent gaming does not predict well-being (Vuorre et al., 2022), thus time-focused prevention strategies may have little impact on the mental health of those at risk for PG. To support the overall mental health of people at risk for PG, prevention could focus on helping them better meet their psychological needs. King et al. (2018) conducted a literature review on existing PG prevention strategies, several of which could support individuals in meeting psychological needs. For example, exploring alternatives to gaming, encouraging regular physical exercise, goal setting, and teaching self-control strategies could help people feel autonomous and competent, and providing opportunities for socializing and community involvement could help people satisfy relatedness needs. Conceivably, these strategies could be effective at all levels of prevention (e.g., primary, secondary, tertiary). For those at immediate risk for PG or who have developed PG, family interventions to improve communication and feelings of connection may be useful (Torres-Rodríguez et al., 2018).

Limitations and future directions

Due to the design of this study, we are unable to make causal inferences about the development or course of PG. Nonetheless, our findings lead to additional questions that may influence future research. For example, studies sampling problematic gamers could assess relations between met and unmet needs for autonomy, competence, and relatedness and the development of PG symptoms over time. The present study had only eight focus groups. Nonetheless, our data approached saturation (Barbour, 2007). That is, focus groups coded later during data analysis reflected themes from other groups but did not contribute new themes. Even though data approached saturation, generalizability is limited by the small sample size typical to qualitative studies; it is possible new themes and perspectives would have emerged if more focus groups were conducted.

A second limitation of this study was the composition of our overall sample in terms of age, which consisted primarily of college students. However, video gaming and PG appear most prevalent among this age group (Fam, 2018; Rehbein et al., 2015; Ünübol et al., 2020). Additionally, we only sampled one adult non-gamer group—who did not identify as gamers despite reporting involvement with flight simulators and puzzle games. Middle-aged gamers were underrepresented in this study, and future qualitative research into SDT and PG should sample this group as they comprise most gamers (Nielsen Holdings, 2018). Since all participants were recruited through connections with a local university, participants' opinions cannot be considered representative of the general population. Future qualitative research on the development of PG can obtain more representative samples by recruiting a larger number of participants and participants from more diverse backgrounds and communities.

A final limitation of the present study was the lack of problematic gamers in our sample. Future research on SDT and PG should intentionally sample individuals who identify as problematic gamers or meet criteria for IGD/GD.

Conclusion

The present study used deductive qualitative analysis of focus groups to determine frequent gamers', non-frequent gamers', and adult non-gamers' perceptions of how problematic gaming develops over time, using Self-Determination Theory as a theoretical framework. Responses were similar across groups. Regardless of attitudes and experiences with video games, participants conceptualized problematic gaming as a function of unmet psychological needs for autonomy, competence, and relatedness. Considering problematic gaming as a function of unmet psychological needs may help guide treatment, prevention, and research. For example, therapists could use coping skills training and behavioral activation to increase problematic gamers' sense of autonomy, competence, and relatedness. Prevention initiatives may be enhanced by efforts to reduce social and environmental barriers to fulfilling basic psychological needs. Regarding future qualitative research, a logical next step would be to interview problematic gamers about their unmet psychological needs and whether these motivate them to play video games.

Author contributions **Corey M. Monley, BGS:** conceptualization, methodology, formal analysis, investigation, writing – original draft, writing – review & editing, project administration **Bruce S. Liese, PhD:** conceptualization, methodology, writing – review & editing, supervision **Lindsay M. Oberleitner, PhD:** validation, writing – review & editing.

Data availability The datasets generated during and analyzed during the current study are available in the Open Science Foundation Repository: https://osf.io/9y5zd/?view_only=5e6e33d84b0b4cd193c38cbbb63e7c84

Declarations

Ethical approval Human subjects research was approved by the institution's Institutional Review Board.

Informed consent Informed consent was obtained from all participants at the outset of the online demographic surveys and again at the outset of focus groups.

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

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