

Player-avatar interactions in habitual and problematic gaming: A qualitative investigation

RAQUEL GREEN¹, PAUL H. DELFABBRO¹ and
DANIEL L. KING^{1,2*} 

¹ School of Psychology, The University of Adelaide, Australia

² College of Education, Psychology and Social Work, Flinders University, Australia

Journal of Behavioral
Addictions

10 (2021) 2, 223–233

DOI:
[10.1556/2006.2021.00038](https://doi.org/10.1556/2006.2021.00038)
© 2021 The Author(s)

Received: June 15, 2020 • Revised manuscript received: February 25, 2021; May 23, 2021 • Accepted: May 26, 2021
Published online: July 8, 2021

FULL-LENGTH REPORT



ABSTRACT

Background and aims: Previous studies have reported that stronger avatar identification and negative self-concept are associated with gaming disorder (GD). This study aimed to examine the value and significance of avatars based on firsthand accounts from regular and problematic gamers, and to identify any potential links between avatar-related experiences and excessive gaming. **Methods:** An online survey of 993 adult gamers yielded 3,972 text responses. Qualitative analysis of 59,059 words extracted 10 categories of avatar-related perspectives. **Results:** Some problem and non-problem gamers employed sentimental language (e.g., ‘dear friend’, ‘like a child’, ‘part of my soul’) to refer to their avatar. However, most participants perceived avatars as a means of achieving in-game goals and enabling greater interactivity (e.g., socializing). When asked to reflect on hypothetically losing their avatar, participants generally anticipated feeling temporary frustration or annoyance due to lost time and effort invested into the avatar. Although some participants reported that their avatar ‘mattered’, avatars were often considered as superficial (‘just pixels’) and peripheral to the primary reinforcement of achieving in-game rewards and objectives. Some broader psychological and identity issues such as gender dysphoria, rather than ‘addiction’, were cited as motivating persistent avatar-related interactions and attachment. **Discussion and conclusions:** Participants reported diverse views on the psychological value and function of avatars, but the relationship between avatars and problematic gaming or GD was largely unclear or inconsistent, and refuted by some participants. Future research with clinical samples may lead to a better understanding of player-avatar processes, including whether avatar-stimuli facilitate the development of maladaptive gaming habits, particularly among psychologically vulnerable players. Future investigations should be mindful of ‘overpathologizing’ avatar-related phenomena and recognize their important role in socializing, storytelling, and creative expression among gamers.

KEYWORDS

gaming disorder, problematic gaming, avatar, avatar identification, self-concept

INTRODUCTION

Video games offer increasingly sophisticated interactive experiences (Billieux et al., 2015; King, Herd, & Delfabbro, 2017; King, Koster, & Billieux, 2019; Lemenager, Neissner, Sabo, Mann & Kiefer, 2020). Avatars are one of the important elements of gaming that enhances this interactivity (Gilbert et al., 2014; Sibilla & Mancini, 2018; Vasalou & Joinson, 2009). In basic terms, avatars are the player representations that are projected into immersive digital environments (Bailey, West, & Kuffel, 2013; Bessière, Seay, & Kiesler, 2007; Burleigh, Stavropoulos, Liew, Adams, & Griffiths, 2018; Trepke & Reinecke, 2010). Avatars can be human or non-human, realistic or stylized, and customized to alter personal attributes and appearance. Avatars may enable experimentation with idealized aspects of self that might not be possible in the real world (Allison, Von Wahlde, Shockley, & Gabbard, 2006; Forsyth, Chesla, Rehm, & Malone, 2017; King & Delfabbro, 2014; Przybylski et al., 2012). Certain games that focus on avatars are generally referred to as ‘role-playing’ games, such as

*Corresponding author.
E-mail: daniel.king@flinders.edu.au

massively multiplayer online role-playing games (MMORPGs) (Smahel, Blinka, & Ledabyl, 2008). However, almost all types of games (e.g., sports and racing, shooters, strategy and puzzle games) can include avatars and role-playing options (Ducheneaut, Wen, Yee, & Wadley, 2009; King & Delfabbro, 2019). Although many player-avatar interactions confer personal benefits (e.g., enjoyment, creativity, identity exploration), avatar features have recently been the focus of survey-based and neuroimaging studies into the development and maintenance of problematic gaming (Green, Delfabbro, & King, 2020; Lemenager et al., 2020).

It has been suggested that some gamers may form a kind of psychological attachment to their avatar (Dengah & Snodgrass, 2020; Li, Liau, & Khoo, 2011; Liew, Stavropoulos, Adams, Burleigh, & Griffiths, 2018). This relationship has been described as a “strong emotional bond” (Mancini, Imperato, & Sibilla, 2019), a “powerful psychological component of the gaming world” (Stavropoulos, Dumble, Cokorilo, Griffiths, & Pontes, 2019), and important to an “individual’s personal narrative, psychological wellbeing, and self-conception” (Wolfendale, 2007). Further, avatars have been proposed to fulfil important needs and be “far more than mere online objects” (Wolfendale, 2007), enabling gamers to project unconscious thoughts and express suppressed versions of their psyche (Stavropoulos, Gomez, Mueller, Yucel, & Griffiths, 2020). Many of these experiences fall under the umbrella term of ‘avatar identification’, defined as “the temporary alteration in self-perception of the player induced by the mental association with their game character” (Van Looy et al., 2012; p. 206). Avatar identification is often a positive or desired experience, as avatars enable identity expression, storytelling, and immersion in the gaming world (Hussain & Griffiths, 2009; Klimmt, Hefner, & Vorderer, 2009; Whang & Chang, 2004). However, avatar identification has also been significantly linked with excessive gaming (Mancini and Sibilla, 2017; Sioni, Burleson, & Bekerian, 2017; Smahel et al., 2008; You, Kim, & Lee, 2017) and depressive mood (Bessière et al., 2007; Burleigh et al., 2018; You et al., 2017), suggesting that this phenomenon may affect the general well-being of players in different ways.

With the recognition of ‘Internet gaming disorder’ in the DSM-5 (APA, 2013) and the inclusion of ‘Gaming disorder’ (GD) in the ICD-11 (WHO, 2019), avatar-related phenomena have been proposed to be involved in problem gaming and GD. Survey-based studies of gamers have reported significant positive correlations between avatar identification and excessive gaming (Mancini et al., 2019; Smahel et al., 2008; You et al., 2017; Zhong & Yao, 2013). Some researchers have even argued that avatar identification should be added to the definitional criteria of gaming disorder (e.g., in the DSM-5 or ICD-11). For example, Sioni et al., 2017 reported that avatar identification may be “a valid indicator in diagnosing GD”. Other studies have included recommendations that clinicians explore the “relationship between their client’s identity inside and outside of the game in relation to their use of avatars” (Burleigh et al., 2018),

examine an avatar’s characteristics to “provide a subtle (or obvious) glimpse into players’ unconscious processes” (Sioni et al., 2017), and that “virtual demographics, such as the Draenei race” [in the game *World of Warcraft*] should be carefully considered when preventing and treating problem gaming” (Morcos, Stavropoulos, Rennie, Clark, & Pontes, 2019). These recommendations, if followed, may alter the standard procedures and provision of mental health advice and services, and thus warrant critical examination.

Player-avatar interactions have been proposed to influence the development and maintenance of gaming behaviours. A guiding theory in this area has been self-discrepancy theory (see Higgins, 1987) which proposes that people have multiple selves (i.e., actual, ought, and ideal selves). Self-discrepancy theory suggests that people can experience a lack of fulfilment and distress when there are large discrepancies between these selves, and some researchers have suggested that using avatars to generate an alternative self-identity may help resolve such discrepancies. There is growing quantitative evidence on the topic of avatars and problem gaming exploring this possibility (Green et al., 2020; Lemenager et al., 2020), including survey-based and neuroimaging studies (Choi et al., 2018; Dieter et al., 2015; Kim et al., 2018; Lemenager et al., 2014, 2016), but relatively few qualitative (e.g., interview, case report) studies (Allison et al., 2006; Gilbert et al., 2014; Hussain & Griffiths, 2009).

A current gap in this literature has been the lack of qualitative methods (e.g., interview, case report, and open-response data) to investigate gamers’ experiences with avatars and their potential relationship to problematic gaming (Green et al., 2020; Tsai & Lin, 2003). Very few case reports or other detailed accounts on this topic exist and many of the available studies are now relatively old (e.g., Allison et al., 2006; Chappell, Eatough, Davies, & Griffiths, 2006; Griffiths, 2010; Lee, 2011; Lee & Shin, 2004) and predate the current mental health classifications of GD in the DSM-5 and ICD-11. Thus, it was considered timely to investigate player-avatar phenomena by gathering firsthand qualitative data based on contemporary gaming experiences in the context of GD as an official mental disorder (Stevens, Dorstyn, Delfabbro, & King, 2020). The main purpose of this research undertaking was to examine the value and significance of avatars to regular and problematic gamers, and to identify any potential links between avatar-related experiences and the development and maintenance of persistent and excessive play.

The present study

This study employed a qualitative approach to obtain detailed first-hand accounts that may potentially align with extant conceptual models (e.g., self-discrepancy theory), as well as to generate new perspectives and information that may not have been captured previously in standard surveys. This study was particularly interested in gamers’ views of the perceived importance of avatars in connection to self-identity (i.e., personality traits, abilities, physical attributes, interests, and social roles; Forsyth et al., 2017) relative to other



aspects of the gaming experience, and whether any such experiences were relevant to personal experiences of problematic gaming or gaming disorder (Allison et al., 2006). We employed open-ended questions without explicit reference to terms such as ‘self’, ‘identity’, or problematic gaming terminology (e.g., ‘problems’, ‘disorder’, ‘addiction’) to avoid priming specific terms or frames of reference (Judd, Smith, & Kidder, 1991).

METHOD

Participants

A total of 993 adult participants, mostly male (73%; $n = 725$) with a mean age of 26.4 years ($SD = 8.1$), completed an online survey advertised on online gaming-related forums for various game types, including massively multiplayer online (MMO), multiplayer online battle arena (MOBA), role-playing game (RPG), and first-person shooter (FPS). Responses were collected from the United States (40.1%), European countries (34.3%), Australia (9.4%), Canada (5.0%), and Other (11.2%). Most respondents reported being Caucasian (75.4%), single (59.5%), engaged in employment (61.3%) and/or further study (45.3%). At the time of data collection (April/May 2020), many participants (58.1%) were self-isolating due to COVID-19. Based on gaming disorder (GD) checklist scores, there were 162 (16.3%) problem gamers, including 82 who reported having previously had a gaming problem. Only 1 problem gamer had sought professional help for gaming, compared to 37 who had sought help for other issues (which was comparable to the non-problem gaming group; 22.7 vs 25.0%). The sample comprised of players of MMO ($n = 419$, 42.2%), single-player RPG ($n = 253$, 25.5%), FPS ($n = 125$, 12.6%), MOBA ($n = 80$, 8.1%), and other games ($n = 116$, 11.7%).

Design & procedure

Advertisements were posted on several gaming forums, including Reddit, GameSpot, Games Planet, and PC Gamer Forum. Participants who were aged 18 or older and played games weekly were eligible to participate. The average duration of the survey was 10 minutes and participants were offered to enter the prize draw for a \$50 AUD voucher. The final sample comprised 993 participants after missing/incomplete ($n = 646$) and ineligible participants were excluded (e.g., people who were aged under 18 years old [$n = 4$] or had not played games since COVID-19 [$n = 3$]).

This study presents the results of the 770 responses to the open-ended questions (Section “Open-ended questions”) administered as part of a larger project (see Green, Delfabbro, & King, 2021). These questions enabled participants to elaborate on the standard measures of gaming behaviour (i.e., frequency, preferences), avatar-related activities and preferences (i.e., questions concerning avatar choice, number, attributes, and customization), game and avatar identification (i.e., Player Identification Scale; Van Looy, Courtois, De Vocht, & De Marez, 2012), and problematic

gaming (i.e., IGD checklist; Petry et al., 2014). All participants responded to at least one open-ended question; however, some responses were quite short (e.g., “yes”, “no”, or “yeah, it does”). The average word count for written responses was 14.8 words, with more elaborate responses generally between 100 and 250 words. All written responses (3,972 responses; $N = 59,059$ words) and the data codebook are available in the supplementary file (https://docs.google.com/spreadsheets/d/19y8VW4oVFhlg6oUxFOl3LJbklXI0Hl_vg7wxE2OtyoY/edit?usp=sharing).

Measures

Demographic and gaming-related information. Each participant provided socio-demographic information (e.g., gender, age, ethnicity, country of residence, relationship status, employment status, educational attainment, and educational status) and current lifestyle situation in relation to COVID-19. Regarding gaming preferences and behaviours, participants reported the typical number of hours spent gaming each day, pre- and post-COVID-19. Participants reported their preferred gaming genre, including MMO, MOBA, FPS, RPG (single-player), or Other. Questions about avatar characteristics referred to the main game currently played by the participant. Participants reported the number of avatars they controlled (1 avatar; 2 or more avatars; no identifiable avatar), avatar type (human; non-human creature; non-human non-creature), avatar perspective (first-person only; third-person only; both first-person and third-person perspective), pre-game avatar customizability (default avatar; choice from multiple defaults; fully customizable avatar), and in-game avatar customization (none; some vs. many options).

Problematic gaming. Petry et al.’s (2014) checklist is a 9-item self-report measure to assess DSM-5 gaming disorder (APA, 2013). Items measure symptoms including: preoccupation, tolerance, withdrawal, unsuccessful attempts to limit gaming, deception or lies about gaming, loss of interest in other activities, use despite knowledge of harm, use for escape or relief of negative mood, and conflict/harm. For example, the item measuring tolerance states: “Do you feel the need to play for increasing amounts of time, play more exciting games, or use more powerful equipment to get the same amount of excitement you used to get?” Response options are dichotomous (Yes/No). A score of 5+ indicated problematic status. The checklist has been used in clinical and neurobiological studies of GD, and shown strong psychometric qualities (King, Billieux, Carragher, & Delfabbro, 2020; King, Delfabbro, Billieux, & Potenza, 2020). Internal consistency of the scale in this study was .68. Additional questions concerned overall impression of the gaming-related problem, onset of problems, and treatment-seeking intentions and history.

Open-ended questions. To gather information about gamers’ views of the perceived importance of avatars in connection to identity, and whether any avatar-related



experiences were relevant to personal experiences of problematic gaming, four open-ended questions were developed. Questions were: (1) *How do you generally think or feel about your avatar? Does your avatar matter to you?*, (2) *How would your life be different if your avatar was suddenly deleted?*, (3) *Have you ever felt like it was hard to control your gaming time because you felt immersed in the experience of playing an avatar?* and (4) *Do you have any other comments or experiences about your avatar and gaming habits you would like to share?*. All questions were developed by a registered clinical psychologist (third author) and were designed to be open-ended to elicit longer or elaborated responses. These questions were designed to be relatively neutral (i.e., avoiding direct reference to avatar identification and related concepts, as well as gaming disorder). There was no associated word limit.

Qualitative analysis

The purpose of the qualitative analysis was to generate data-driven, descriptive categories based on the responses to each question, with a focus on describing the characteristics of responses rather than identifying themes that were present throughout the data (see Morse, 2008). As per the COREQ reporting guidelines (Tong, Sainsbury, & Craig, 2007), we declare that we are male and female researchers, including two males with PhDs with 10+ years of research experience and the third who is a female registered psychologist (Masters-level qualification). Further, no relationship was formed with participants prior to this study, and no personal information about the researchers except for their institution details was provided. Participants provided all responses in written text format and were not provided with further opportunities after the study to revise their responses. Qualitative data were transposed to a single document. The most salient information and categories were identified by the first author, who initially coded the datafile and shared the coding with the senior author who checked and either modified or confirmed the coding. This involved assigning category labels to individual text segments that were repeated across the datafile (Snodgrass et al., 2020). The senior author suggested minor revisions to the names of some of the categories and subcategories and to combine two of the subcategories due to their close similarity. There was strong agreement (i.e., at least 95% agreement) between the two raters on the assignment of content to categories. The first and senior author then reread the coding document and made additional changes to the coding document and exchanged this with each other on two further occasions between January and March 2021 which led to total agreement on the categories. All written content was analyzed at the same time and given equal attention in the coding process to ensure an inclusive and comprehensive process. Another document was created to store a list of all identified categories, as well as record a series of relevant extracts illustrating each category (see Supplementary file 1).

This process yielded 3 main categories including 10 subcategories in total (Category 1: *The personal value of avatars*, including subcategories of *emotional connection* (n

= 91 quotes), *tool or facilitating goal pursuit* (n = 93), *real-world self-expression* (n = 80), *representation of an 'ideal self'* (n = 34), *sunk cost reasoning* (n = 170), and *narrative and role-play value* (n = 101); Category 2: *The unimportance of avatars*, including subcategories of *superficiality and irrelevance* (n = 188) and *differentiated from real-world self* (n = 25); Category 3: *The importance of game world and context*, including themes of *avatar value depends on game genre* (n = 25) and *immersion in the world, not the avatar* (n = 53). Responses from problem and non-problem gamers were blinded during the initial coding process, but then re-identified to enable separate examination of problematic gamers' material. Extracted quotes in Section "Results" include identifiers (i.e., gender, age, GD status) that were added after the analysis. Thus, the presented thematic analysis was not biased toward potentially extracting themes specific to any potential judgements or preconceptions related to problem gaming.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. Ethics approval was granted by the School of Psychology Human Research Ethics Subcommittee (approval number: 20/18). Participants were informed that the study was voluntary and that they were free to withdraw at any time. All responses were anonymous. Participants gave informed consent by clicking through to the survey after reading the participant information sheet.

RESULTS

This section presents a summary of the qualitative analysis. A selection of quotes is provided to elucidate each category and subcategory, accompanied by qualifiers to identify the gender (M: Male; F: Female; Other: gender reported as 'other'), age (years), and group status (GD: Meets 5 or more of the GD criteria; Norm: Does not meet the GD criteria) of the respondent. For example, the following qualifiers [M, 26, GD] refer to a 26-year-old male who met the GD criteria. The results in Section "Category 1: The personal value of avatars" explore the value perceptions and experiences of avatar-related phenomena, and Sections "Category 2: The unimportance of avatars and Category 3: The importance of the broader game context" present findings related to opposing views on the importance of avatars and their relationship to self and player experience.

Category 1: The personal value of avatars

Subcategory 1: Emotional connection. Some participants (n = 90) referred to their avatars using sentimental language, such as *part of my soul* [M, 18, Norm], *My avatar means the world to me* [M, 29, Norm], *My characters make me proud like a child would make their parent proud* [M, 23, Norm], and *My character is like a dear friend to me. I keep her extremely close to my heart* [F, 24, Norm]. Other examples



included the avatar as a family member or ‘extension of the family’, and as a ‘role model’ and ‘doll’. The player bond to the avatar was described with reference to feelings of love, pride, care, affection, and nostalgia, and more general references to the avatar as something that “matters”. There were 6 explicit references to ‘like’ and 5 references to ‘love’ for the avatar.

Subcategory 2: Tool or facilitating goal pursuit. Participants were asked to identify aspects of avatars that were important to them. The responses ($n = 92$) were diverse, and often more than one reason was cited, but many shared the common notion that avatars provided the means of achieving specific goals. Participants referred to avatars as a ‘tool’ that allowed them to access and manipulate the gaming world (e.g., *He matters to me as a medium through which to manipulate the game* [M, 26, Norm]; *my avatar is a tool to play the game with* [M, 28, GD]). Accessing and progressing the game’s narrative and interacting with in-game characters were other common goals. Avatars allowed people to socialize, role-play, and interact with other players in the game (e.g., *I use them for role-playing within middle earth, and as a medium to socialise with my friends within the game* [F, 25, Norm]). Participants used their avatar to advance through the game (e.g., *Game progression is linked with the avatar* [M, 41, Norm]) and test their skills against opponents (e.g., *I use it to be competitive in the game* [M, 32, Norm]).

Subcategory 3: Real-world self-expression. Many participants ($n = 76$) referred to using the avatar as means of expressing their own real-world personality, often in social situations online. This was explained as *My avatar is a form of self-expression, and a way to see a bit of myself in the game’s world* [Non-binary, 18, Norm], *my avatar tends to be an extension of myself living in the video game* [M, 21, Norm], and *I play as myself, not the character. Hence why I am having difficulty using avatar in this sense, as it relates more to how other people see me online than how I see myself* [M, 21, Norm]. Responses in this subcategory included clarifications from participants that, although there was an onscreen representation of a character, the player tended to behave in-game in ways that were consistent with their real-world self. In some cases, this was described as an “extension” of the player that enabled interactivity in the virtual environment.

Subcategory 4: Representation of an ‘ideal self’. Participants ($n = 37$) referred to the customizability of avatars and how this allowed them to explore different traits and expressions. The avatar could be designed or improved to possess desirable features or abilities, including an idealized version of their real-world self. Participants described avatars as role models possessing desirable traits and abilities (e.g., *The courage and selflessness some video game characters possess is admirable* [F, 19, Norm]). Others referred to their avatar’s attractive appearance (e.g., *She has the appearance that I wish I had* [F, 29, Norm]; *My avatar is an idealized (physically) version of myself* [F, 18, Norm]). Participants

reported that they perceived their avatar as having attributes they wished to have in the real-world (e.g., *My avatar is all the things I wish I could be if I weren’t held back by finances or worrying what people think of me* [F, 37, Norm]; *My character matters quite a fair amount to me. I see it as the idealization of what I would like to be* [Other, 24, Norm]).

Some respondents stated that their avatar enabled exploration of aspects of the opposite sex or other genders, including explicit reference to “gender dysphoria” (i.e., distress that a person feels due to a mismatch between their gender identity and their birth-assigned sex). The avatar reportedly provided a means of exploring a gender identity that they wished to be in the real world (e.g., *I feel much happier being portrayed as my avatar rather than myself in reality. My avatar is someone I wished I was in reality, a white blonde girl* [M, 28, GD]; *The vast majority of the time, I play as characters off my identified gender to help relieve my dysphoria* [F, 24, Norm]; *It’s who I’d like to be, I think I may suffer from gender dysphoria* [M, 29, Norm]). The creation of avatars (representing another gender) allowed individuals to explore different roles and identities (e.g., *As someone who is questioning my gender, it’s nice to be able to play as the opposite one in videogames* [Other, 22, Norm]). However, exploring the opposite gender was also related to basic curiosity and experimentation; as one participant stated: *“I see my avatar as an opportunity to imagine myself in what-if scenarios. The most common being: What if I was a woman? I tend to identify more with the female cast of a game, even though I am quite comfortable in my identity as a male in real life.”* [M, 31, GD].

Subcategory 5: Sunk cost reasoning. Many participants ($n = 170$) recognized that their personal avatars were important to them due to their investment of time and effort into the avatar’s development. In this sense, participants rationalized the value of the avatar in terms of sunk cost, as determined primarily by game time (sometimes hundreds of hours) or in-game progression (e.g., levels) and, to a lesser extent, actual effort or skill requirement (e.g., *My main attachment to the character is due to time investment and progression status* [M, 25, GD]; *They matter to me, but only because of the time invested in them* [M, 26, Norm]; *I’ve been playing the same character since I was 10, so I have lots of positive emotions and memories associated with it* [F, 18, Norm]). There were 20 references to having spent money on the avatar (e.g., *Realistically, I’ve probably spent over a year of real-life time playing the game and well over \$3,000* [M, 31, GD]). These aspects were reiterated in response to the question regarding the potential consequences of deleting the avatar; as one participant noted *“I would be sad, not so much because of me losing the character’s looks but the time spent achieving the levels, items, currency and other milestones. We are talking hundreds of hours down the drain”* [M, 28, Norm].

Subcategory 6: Narrative and role-play value. Participants ($n = 101$) referred to the value of the avatar’s development in terms of the in-game story elements. Participants referred



to character growth and actions that progress the story, including the resolution of conflict and development of more powerful attributes (e.g., *I feel that they're the main character of a story I want to see more of. They matter to me in that I care about the story* [F, 28, Norm]; *They matter to me in the sense that I enjoy playing their story, seeing what kind of person they can become* [M, 25, GD]). Participants referred to feelings of satisfaction and, in some cases, pride in creating and customizing their avatar (e.g., *It is a character I created and love, I am fond of the character as you might be fond of anything you create* [M, 37, Norm]; *A unique avatar is something I can be proud of or celebrate with friends* [M, 25, Norm]; *I'm proud of myself for what it has become in the same way a woodworker would be proud of a really nice table he made* [M, 29, Norm]). Some participants referred to ways in which their avatar's story might reflect or be influenced by some of their own life experiences (*"I created her at a time in my life when I was very sad and even though I've improved since then, she remains as an outlet for me to express my sadness. She suffers as I have suffered."* [F, 21, Norm]). Many participants explained that they became 'immersed' in the game's storyline but this did not involve a sense of immersion in the character (e.g., *"No, not the avatar. Immersion is either a function of good storytelling and direction, or the mechanical fun of a particular game loop"* [M, 29, Norm]).

Category 2: The unimportance of avatars

Subcategory 7: Superficiality and irrelevance. Although some participants stated that their avatar enabled self-expression and identity exploration, many respondents ($n = 188$) reported that avatars were meaningless or superficial outside of the gaming experience. This was the largest subcategory ($n = 188$), although the analysis did not include many of the very brief responses (i.e., 2–3 words) that indicated lack of interest in the avatar (e.g., *don't care* or *doesn't matter*) which would have greatly increased the size of this subcategory. Avatars were described as *a bunch of pixels that have nothing to do with my real life* [M, 22, Norm], *merely a string of 1s and 0s* [M, 18, Norm], *pretty meaningless in a void* [M, 32, Norm], *an empty vase* [M, 32, Norm], *puppets that look nice and do cool things* [M, 28, Norm], and *just a means to an end* [M, 30, Norm]. Participants referred to a lack of personal preference or emotional connection to their avatar (e.g., *It could just be a brick and that would be fine* [M, 29, Norm]).

Subcategory 8: Differentiated from real-world self. Some participants ($n = 24$) differentiated their real-world identity from their online identity, and made strong clarifying statements to this effect. Avatars were described as separate and distinct from their actual-self, and as having no relationship or influence on their self-concept or vice-versa (e.g., *It's not an extension of myself . . . It's just my online game avatar, nothing more nothing less* [M, 22, Norm]; *It's a completely separate entity. I do sometimes get thrown when people treat my avatar as if it's me* [M, 43, Norm]; *Overall, I*

have a strong sense of self and I don't place my self-worth on a digital avatar so its impact on my day-to-day life would be minimal [F, 25, Norm]; *An avatar is an avatar. I don't self-insert into it. . . It's kind of a canvas for whatever aesthetic whims I may have* [M, 29, Norm]). Some participants commented on external views (e.g., statements in the media and games research) about gaming avatars and self-identity (e.g., *One thing I've always remarked upon in such articles is how they describe the avatars as if you're trying to BE the avatar. As if you really think you're a wizard in Baldur's Gate or a Jedi or a Hogwarts student. No wonder some people think gamers are weird* [F, 39, GD]). Another participant challenged the notion of avatars expressing or representing self-concept or aspects of gender, age, or race (e.g., *The current trend of discussion about "representation" in games is a ridiculous one. The avatar in games is not there to represent the player. . . It is a puppet, not part of the player's personality* [M, 46, Norm]).

Category 3: The importance of the broader game context

Subcategory 9: Avatar value depends on game genre. Some participants ($n = 24$) acknowledged feeling some degree of personal investment in their avatar but that this depended greatly on the type of game. Avatars in massively multiplayer online (MMO) games were perceived as important because the game involved a focus on character development, avatar customization, and role-playing opportunities. Participants developed a stronger 'attachment' to the avatar in MMO games than other games (e.g., *My avatar matters to me depending in the genre of game that I am playing. When playing an MMO I feel as if the character is "me" and that the character is an extension of myself. However, when playing a MOBA the avatar I control does not feel like "me" it just feels like a character I control that has its own personality and actions that are separate from me* [F, 22, GD]; *In games like MMOs where a character's name, appearance, and even backstory are yours to create, I have a little more personal attachment to them because I like to come up with characters with compelling personalities and backstories* [M, 36, Norm]). Role-playing games were similarly recognized as games where the user developed a stronger connection with the avatar (e.g., *If I play an RPG, it matters and I almost always identify with its actions. For grinding or PVP games, I don't really care for it* [M, 31, Norm]; *In first-person RPGs, avatar must resonate with some part of myself. In other games, it is less important* [M, 26, Norm]). Avatar customizability was a feature of these games identified as contributing to avatar attachment (e.g., *The more choices I am given in avatar customization the more I can identify with the character* [Other, 51, Norm]; *I connected to my customized avatar/character because I made choices that aligned with my own beliefs and thought processes* [F, 20, Norm]).

Participants highlighted some in-game situations where there was a lack of connection with the avatar, such as when playing games where the avatar was more short-lived or

disposable (e.g., *Most of the games I play tend to be games where the avatar is regularly tossed away, such as in the roguelike genre or in Path of Exile's league system. So getting attached to a character is not common for me* [Other, 24, Norm]) and the game action itself was frequently reset or restarted, such as new rounds or levels that clear progress (e.g., *My character doesn't matter to me as it is a MOBA game and my character changes* [M, 21, GD]).

Subcategory 10: Immersion in the world, not the avatar. Many participants ($n = 54$) referred to the concept of immersion in the game, which was generally characterized as the experience of total involvement in the game. Many participants believed that the avatar had low relevance on its own in eliciting immersion. Rather, immersion was reportedly achieved via the player's sustained interaction with the sum of the game's parts working in unison (i.e., the overall game experience) (e.g., *I get sucked up in the game, not specifically the avatar* [M, 26, GD]; *The game itself, sure. But the avatar? No* [M, 29, Norm]; *Hard to control gaming time because of immersion? Yes. Because of an avatar? No* [M, 18, Norm]). Some participants specified the immersive nature of the game setting and world (e.g., *Usually, the world and environment in a game and the ability to interact with it matter more to me than my avatar. . . I don't often give my avatars much thought* [M, 19, Norm]; *Honestly, I don't think that immersion into the avatar is the biggest thing here. It's the sights, the things to do, the rewards. It is a very beautifully designed game and the terrains are so varied* [F, 53, GD]).

Evaluation of problem gamer responses. An evaluation of 452 responses from the 162 participants who met the GD criteria was conducted. Like the non-problem gamers, there were some participants who expressed a form of attachment to their avatar, including *I have grown really attached* [M, 31, GD], *My avatar matters a lot to me* [F, 53, GD], and *it has a deep sense of familiarity and feels very personal to me* [M, 28, GD]. However, there were also some participants who reported having no such feelings toward their avatar, responding affirmatively but referring only to the visual appearance or aesthetic of the avatar (e.g., *Yes, I want him to be cool so I can get attention* [M, 21, GD]). Some participants reported that their avatar did not matter to them (e.g., *My avatar doesn't really matter to me at all* [M, 18, GD]; *My avatar doesn't really matter to me* [M, 22, GD]; *Doesn't really matter to me* [M, 23, GD]; *No, it's just a character in the game* [M, 19, GD]; *I don't feel any strong, personal, emotional connection with any of the avatars I play as in video games* [M, 25, GD]). There were a further 12 responses that directly stated 'no' or 'not really' in response to the first question about avatar attachment. Similarly, there were mixed responses to the question about hypothetically losing the avatar, ranging from strong emotional responses of anger, annoyance and sadness to mild reactions and total indifference (and noting that they would either make a new character or play a different game as a result).

There were also mixed responses to the question of the role of the avatar in losing control over gaming or engaging in persistent gaming. Of the 25 responses that responded

affirmatively (i.e., stating 'yes' and referring to excessive gaming), there were no clear examples of how the avatar was an active structural feature of the game that affected excessive gaming. In contrast, there were many clear examples of how the avatar was not considered the relevant 'addictive' component of gaming (e.g., *I don't think in playing the avatar themselves, no, but other aspects maybe* [F, 19, GD], *I don't actually get especially immersed in my characters while in-game* [M, 23, GD], *Just the game is addicting not the avatar itself* [M, 19, GD]; *Any addictive tendencies I've felt have always been driven by games' progression systems (gear/skills/etc)* [M, 31, GD]; *Whenever it's hard to control my gaming time, it's more likely because of addictive gaming mechanisms enticing me to play just a little bit more or because I'm lost in the story. Not because I want to be that person* [F, 39, GD]; *While the experience of having an avatar is nice, the game itself is "addictive"* [F, 23, GD]).

DISCUSSION

Avatars have increasingly been the focus of empirical studies of player-game interactions implicated in problem gaming and GD (Kim et al., 2018; Liew et al., 2018; Stavropoulos et al., 2020; You et al., 2017). To address the lack of detailed firsthand accounts in this area, the present study adopted a qualitative approach to investigate regular and problem gamers' avatar-related perceptions and experiences. It was found that players' views were diverse in regard to the psychological value and function of avatars. However, there were several perspectives that suggested some commonalities across different player-avatar interactions. First, many participants expressed a view of avatars as being the means of achieving in-game goals, referring to the avatar as a 'tool' or part of the medium or user interface that enabled interactivity or manipulation of objects. Players referred to various in-game goals and acts of reward-seeking (e.g., story progress, obtaining rare items, socializing) in ways that subsumed the value or importance of avatar. In other words, the avatar was described as a 'means to an end' rather than the primary reinforcing aspect of the game, although there were instances of reward-seeking that directly implicated the avatar (e.g., obtaining rewards to customize or otherwise improve the avatar).

A consistent finding in survey-based studies has been that players form an attachment to, or identify with, aspects of their personal avatar (Li et al., 2011; Liew et al., 2018; Mancini et al., 2019; Stavropoulos et al., 2019; Wolfendale, 2007). The present study found mixed support for this proposition, which was consistent with Sibilla and Mancini (2018). First, some participants referred to the customizability of avatars and how this allowed them to explore different desirable traits and expressions, which may be viewed as an idealized version of their real-world self. However, many participants who reported these experiences were frequent but non-problematic gamers, indicating that these 'attachments' were commonplace in gaming and may



not be specific to problem gaming experiences. A study of user-avatar bonds by Stavropoulos et al. (2020), whose sample ($N = 1022$ MMO gamers) was comparable to the sample in the present study, proposed a subtype of ‘fused’ players. Fused players referred to individuals whose identity was ‘fused’ to their avatar – as measured by the endorsement of statements including “Both me and my character are the same” (Blinka, 2008). The authors explained that fused players “tended to present with real-life behaviours more impacted by their online avatars, while concurrently tending to be more immersed with their avatar in game action, and to use avatars more as a mean to compensate real-life deficits” (p. 8). Lemenager et al.’s (2020) systematic review also referred to ‘fusion’ in stating “the individual increasingly fuses with the virtual world and accordingly fosters an idealized virtual self-concept”.

The present study found references to the avatar as representing an ideal self but very limited evidence of players reporting experiences of ‘fusion’ with their avatar. For example, when asked about the personal consequences of losing their avatar, participants tended to refer to the avatar as an object (e.g., “Losing my favourite gaming-avatar would feel the same as losing my favourite one of some everyday-object”) or express feelings of frustration or disappointment at losing their time investment in the game. Such feelings were often qualified as being short-lived and followed by an adaptive action such as re-making the character or playing a different game. Some participants seemed to refer to a genuine personal loss, comparing the avatar to a “friend” and a “pet”. Across all the written responses (59,059 words) there were no explicit references or allusions to self-identity being ‘fused’, ‘joined’, ‘coupled’, ‘united’ or ‘combined’ with their avatar (or identity being ‘shared’, ‘the same’, or ‘overlapping’). However, consistent with previous empirical studies (Burleigh et al., 2018; Mancini et al., 2019; Morcos, Stavropoulos, Rennie, Clark, & Pontes, 2019; Sioni et al., 2017; You et al., 2017), some players referred to feelings of ‘attachment’ and ‘connection’, which were clarified as simply meaning ‘liking’ the appearance or other attribute of the avatar or part of becoming immersed in the game world or narrative. Based on these diverse views, it is not clear whether certain survey items in previous studies that measure certain strong perceptions of avatars necessarily capture these views effectively or may be over-interpreting (or, attributing too much importance to) the semantics of language that attempts to convey embodiment in a virtual representation (e.g., “my character is an extension of myself”; Van Looy et al., 2012; “Both me and my character are the same”: Blinka, 2008; “I see things differently when I play with another character”: Stavropoulos et al., 2020). For example, it could be that some gamers may endorse some avatar-related questions if these items refer to a close (but inaccurate) approximation of their avatar beliefs. This may then result in researchers misconstruing the importance of the avatar and/or citing the endorsement of these items to explain dysfunctional gaming behaviours, particularly in the absence of alternative explanations or data (e.g., sunk cost, comorbidities, self-regulation issues). Future research

employing cognitive interviews and survey measures to determine how participants interpret certain items in standard survey tools may be a helpful next step.

Another possibility is that some player-avatar bonds arise from psychological issues unrelated to problematic gaming or GD, but which still maintain their engagement in gaming activities. In particular, some participants related their avatar identification to gender identity-related issues not directly related to gaming disorder, such as the desire to transition to the opposite sex. In this way, gaming may enable gender and identity experimentation as a way of coping with distress about gender identity and may be only one of several contexts in which this experimentation is occurring in the person’s life. Another potential issue is the role of third or unmeasured variables. For example, in studies that report associations between measures of avatar identification, problematic gaming, and general psychological distress (e.g., the DASS-21) it is possible that other factors (e.g., self-regulation difficulties, impaired control) may account for the association between all these variables.

Many participants in this study, including self-identified problem gamers who played avatar-centric games (e.g., MMO games), perceived their personal avatars as a relatively unimportant, even superficial, aspect of the overall gaming experience. These participants explained that their avatars did not have personal or sentimental value (e.g., based on terms such as ‘meaningless pixels’, ‘empty vase’, and ‘a bunch of 1s and 0s’). This was consistent with our previous qualitative study of regular and problematic gamers who viewed rewards in games as “artificial and worthless” when asked to reflect on their importance (King et al., 2017, p. 529). In this study, participants referred to appealing avatar attributes but clarified that these were gameplay features that enable exploration and progression. Participants explained that some games (e.g., social online games, role-playing games) had a greater focus on avatars and related features (social interaction, customizability) but that avatars alone did not elicit immersion into the game. Rather, in-game immersion was attributed to the synergy of game elements (e.g., world, story, rewards). These views suggest that it may be reductionistic to attribute immersion to the avatar independent of other in-game features, in the same way that books and films do not rely solely on their characters for immersion.

Limitations

The strengths of this study included: (a) open-ended questions that eschewed assumptions about pathology and player-avatar interactions; (b) a large and diverse sample of regular gamers, including a large number of females ($N = 243$), who are often lacking in gaming studies (King & Potenza, 2020); (c) a sample involved in games across various genres (MMO, MOBA, RPG, and FPS games) and types of avatars (e.g., single/multiple avatars, human/non-human avatars, first/third person perspective, levels of customizability; see <withheld for review>); and (d) detailed responses with evidence of critical reflection. However, this study had several limitations. First, the responses were



obtained anonymously online. While this approach increased the likelihood of honest self-disclosure, it may have lacked the validity of face-to-face and telephone/web-based interviewing. Second, the sample was predominantly composed of adults, and therefore results may not generalize to adolescents, for whom issues of identity may be particularly salient. Third, data collection occurred during the COVID-19 pandemic, which may have impacted the way in which participants reported on their avatar-related views and relationships (e.g., minimizing its importance in the context of various stressors and shifting priorities) (King et al., 2020; Kiraly et al., 2020). Finally, although participants often provided sufficient clarification, the study lacked follow-up questions and the capacity to prompt participants for further detail or clarification.

CONCLUSIONS

This qualitative study provides firsthand perspectives on player-avatar interactions that will hopefully contribute to current debates on GD and research efforts to identify potential mechanisms of problematic gaming (Brand et al., 2020; King et al., 2019). These data highlighted diverse views concerning the value of avatars and their function in gaming. Although many respondents reported that avatars were a useful vehicle through which to enhance game narratives and progression, they were also considered superficial, replaceable, and largely unrelated to self-concept. Some participants reported anticipated regret at the prospect of losing all their time and money invested in a gaming avatar, but there was no clear indication that the avatar itself was linked to the development or maintenance of persistent or problematic gaming. The relationship between avatars and problematic gaming or GD was largely unclear or inconsistent, and refuted by some participants. Future research with clinical samples may help to gain a better understanding of avatar-related processes, including how avatar-stimuli may establish gaming habits under certain conditions, such as in relation to vulnerabilities including low self-regulation or poor inhibitory control. This research suggests that researchers should be cautious about suggestions to include avatar identification as a symptom of IGD in the DSM-5 (Sioni et al., 2017), particularly in the context of efforts to streamline GD to its most clinically valid and representative form (Castro-Calvo et al., 2021). Such proposals may ‘overpathologize’ gaming (Billieux, Flayelle, Rumpf, & Stein, 2019) and negate the important role that in-game avatars play in socializing, storytelling, and other creative activities in recreational gaming. One would also need to ensure that any strong self-identification with avatars was not otherwise accounted for by other psychologically meaningful issues confronting the gamer at the same time.

Funding sources: This work received financial support from a Discovery Early Career Researcher Award (DECRA) DE170101198 funded by the Australian Research Council (ARC).

Authors’ contribution: RG and DLK designed the study and cowrote the first draft of the manuscript. RG recruited participants and analyzed the data with assistance from DLK. All authors contributed to and approved the final manuscript.

Conflict of interest: The authors declare no competing interests. The authors alone are responsible for the content and writing of the paper.

SUPPLEMENTARY MATERIAL

Supplementary data to this article can be found online at <https://doi.org/10.1556/2006.2021.00038>.

REFERENCES

- Allison, S. E., Von Wahlde, L., Shockley, T., & Gabbard, G. O. (2006). The development of the self in the era of the internet and role-playing fantasy games. *American Journal of Psychiatry*, 163, 381–385. <https://doi.org/10.1176/appi.ajp.163.3.381>.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders – DSM-5* (5th ed.). Arlington, VA: Author.
- Bailey, K., West, R., & Kuffel, J. (2013). What would my avatar do? Gaming, pathology, and risky decision making. *Frontiers in Psychology*, 4, 609. <https://doi.org/10.3389/fpsyg.2013.00609>.
- Bessière, K., Seay, A. F., & Kiesler, S. (2007). The ideal elf: Identity exploration in World of Warcraft. *Cyberpsychology & Behavior*, 10, 530–535. <https://doi.org/10.1089/cpb.2007.9994>.
- Billieux, J., Flayelle, M., Rumpf, H. J., & Stein, D. J. (2019). High involvement versus pathological involvement in video games: A crucial distinction for ensuring the validity and utility of gaming disorder. *Current Addiction Reports*, 6(3), 323–330. <https://doi.org/10.1007/s40429-019-00259-x>.
- Billieux, J., Thorens, G., Khazaal, Y., Zullino, D., Achab, S., & Van der Linden, M. (2015). Problematic involvement in online games: A cluster analytic approach. *Computers in Human Behavior*, 43, 242–250. <https://doi.org/10.1016/j.chb.2014.10.055>.
- Blinka, L. (2008). The relationship of players to their avatars in MMORPGs: Differences between adolescents, emerging adults and adults. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 2(1). <https://cyberpsychology.eu/article/view/4211/3252>.
- Brand, M., Rumpf, H. J., Demetrovics, Z., Müller, A., Stark, R., King, D. L., & Potenza, M. N. (2020). Which conditions should be considered as disorders in the International Classification of Diseases (ICD-11) designation of “other specified disorders due to addictive behaviors”? *Journal of Behavioral Addictions*. <https://doi.org/10.1556/2006.2020.00035>.
- Burleigh, T. L., Stavropoulos, V., Liew, L. W., Adams, B. L., & Griffiths, M. D. (2018). Depression, internet gaming disorder, and the moderating effect of the gamer-avatar relationship: An exploratory longitudinal study. *International Journal of Mental*



- Health and Addiction*, 16, 102–124. <https://doi.org/10.1007/s11469-017-9806-3>.
- Castro-Calvo, J., King, D. L., Stein, D., Brand, M., Carmi, L., Chamberlain, S. R., . . . , Billieux, J. (2021). Expert appraisal of criteria for assessing gaming disorder: An international Delphi study. *Addiction*. <https://doi.org/10.1111/add.15411>.
- Chappell, D., Eatough, V., Davies, M. N., & Griffiths, M. (2006). EverQuest—It's just a computer game right? An interpretative phenomenological analysis of online gaming addiction. *International Journal of Mental Health and Addiction*, 4, 205–216. <https://doi.org/10.1007/s11469-006-9028-6>.
- Choi, E. J., Taylor, M. J., Hong, S. B., Kim, C., Kim, J. W., McIntyre, R. S., & Yi, S. H. (2018). Gaming-addicted teens identify more with their cyber-self than their own self: Neural evidence. *Psychiatry Research: Neuroimaging*, 279, 51–59. <https://doi.org/10.1016/j.pscychresns.2018.05.012>.
- Dengah, H. F., & Snodgrass, J. G. (2020). Avatar creation in video-gaming: Between compensation and constraint. *Games for Health Journal*, 9, 265–272. <https://doi.org/10.1089/g4h.2019.0118>.
- Dieter, J., Hill, H., Sell, M., Reinhard, I., Vollstädt-Klein, S., Kiefer, F., . . . , Lemenager, T. (2015). Avatar's neurobiological traces in the self-concept of massively multiplayer online role-playing game (MMORPG) addicts. *Behavioral Neuroscience*, 129, 8–17.
- Ducheneaut, N., Wen, M. H., Yee, N., & Wadley, G. (2009). Body and mind: A study of avatar personalization in three virtual worlds. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1151–1160).
- Forsyth, S. R., Chesla, C. A., Rehm, R. S., & Malone, R. E. (2017). It feels more real: An interpretive phenomenological study of the meaning of video games in adolescent lives. *Advances in Nursing Science*, 40, E1–E17. <https://doi.org/10.1097/ANS.0000000000000183>.
- Gilbert, R., Thadani, V., Handy, C., Andrews, H., Sguigna, T., Sasso, A., & Payne, S. (2014). The psychological functions of avatars and alt (s): A qualitative study. *Computers in Human Behavior*, 32, 1–8. <https://doi.org/10.1016/j.chb.2013.11.007>.
- Green, R., Delfabbro, P. H., & King, D. L. (2020). Avatar- and self-related processes and gaming disorder: A systematic review. *Addictive Behaviors*, 108, 106461. <https://doi.org/10.1016/j.addbeh.2020.106461>.
- Green, R., Delfabbro, P. H., & King, D. L. (2021). Avatar identification and problematic gaming: The role of self-concept clarity. *Addictive Behaviors*, 113, 106694. <https://doi.org/10.1016/j.addbeh.2020.106694>.
- Griffiths, M. D. (2010). The role of context in online gaming excess and addiction: Some case study evidence. *International Journal of Mental Health and Addiction*, 8, 119–125. <https://doi.org/10.1007/s11469-009-9229-x>.
- Higgins, E. T. (1989). Self-discrepancy theory: What patterns of self-beliefs cause people to suffer? In *Advances in Experimental social Psychology* (Vol. 22, pp. 93–136). Academic Press.
- Hussain, Z., & Griffiths, M. D. (2009). The attitudes, feelings, and experiences of online gamers: A qualitative analysis. *CyberPsychology & Behavior*, 12, 747–753. <https://doi.org/10.1089/cpb.2009.0059>.
- Judd, C. M., Smith, E. R., & Kidder, L. H. (1991). *Research methods in social relations* (6th ed.). Fort Worth, USA: Harcourt Brace Jovanovich College Publishers.
- Kim, M. K., Jung, Y. H., Kyeong, S., Shin, Y. B., Kim, E., & Kim, J. J. (2018). Neural correlates of distorted self-concept in individuals with internet gaming disorder: A functional MRI study. *Frontiers in Psychiatry*, 9, 1–8. <https://doi.org/10.3389/fpsy.2018.00330>.
- King, D. L., Billieux, J., Carragher, N., & Delfabbro, P. H. (2020). Face validity evaluation of screening tools for gaming disorder: Scope, language, and overpathologizing issues. *Journal of Behavioral Addictions*, 9, 1–13. <https://doi.org/10.1556/2006.2020.00001>.
- King, D. L., Chamberlain, S. R., Carragher, N., Billieux, J., Stein, D., Mueller, K., & Delfabbro, P. H. (2020). Screening and assessment tools for gaming disorder: A comprehensive systematic review. *Clinical Psychology Review*, 77, 101831. <https://doi.org/10.1016/j.cpr.2020.101831>.
- King, D. L., & Delfabbro, P. H. (2014). The cognitive psychology of Internet gaming disorder. *Clinical Psychology Review*, 34, 298–308. <https://doi.org/10.1016/j.cpr.2014.03.006>.
- King, D. L., Delfabbro, P. H., Billieux, J., & Potenza, M. N. (2020). Problematic online gaming and the COVID-19 pandemic. *Journal of Behavioral Addictions*, 9(2), 184–186. <https://doi.org/10.1556/2006.2020.00016>.
- King, D. L., Delfabbro, P. H., Deleuze, J., Perales, J. C., Király, O., Krossbakken, E., & Billieux, J. (2019). Maladaptive player-game relationships in problematic gaming and gaming disorder: A systematic review. *Clinical Psychology Review*, 73, 101777. <https://doi.org/10.1016/j.cpr.2019.101777>.
- King, D. L., Herd, M. C. E., & Delfabbro, P. H. (2017). Tolerance in Internet gaming disorder: A need for increasing gaming time or something else? *Journal of Behavioral Addictions*, 6, 525–533. <https://doi.org/10.1556/2006.6.2017.072>.
- King, D. L., Koster, E., & Billieux, J. (2019). Study what makes games addictive. *Nature*, 573, 346. <https://doi.org/10.1038/d41586-019-02776-1>.
- King, D. L., & Potenza, M. N. (2020). Gaming disorder and female adolescents: A hidden problem? *Journal of Adolescent Health*, 66, 650–652. <https://doi.org/10.1016/j.jadohealth.2020.03.011>.
- Király, O., Potenza, M., Stein, D. J., King, D. L., Hodgins, D. C., Saunders, J. B. . . . , Demetrovics, Z. (2020). Preventing problematic internet use during the COVID-19 pandemic: A consensus guideline. *Comprehensive Psychiatry*, 100, 152180.
- Klimmt, C., Hefner, D., & Vorderer, P. (2009). The video game experience as “true” identification: A theory of enjoyable alterations of players' self-perception. *Communication Theory*, 19, 351–373. <https://doi.org/10.1111/j.1468-2885.2009.01347.x>.
- Lee, E. J. (2011). A case study of internet game addiction. *Journal of Addictions Nursing*, 22, 208–213. <https://doi.org/10.3109/10884602.2011.616609>.
- Lee, O., & Shin, M. (2004). Addictive consumption of avatars in cyberspace. *CyberPsychology & Behavior*, 7, 417–420. <https://doi.org/10.1089/cpb.2004.7.417>.
- Lemenager, T., Dieter, J., Hill, H., Koopmann, A., Reinhard, I., Sell, M., & Mann, K. (2014). Neurobiological correlates of physical self-concept and self-identification with avatars in addicted players of Massively Multiplayer Online Role-Playing Games (MMORPGs). *Addictive Behaviors*, 39, 1789–1797. <https://doi.org/10.1016/j.addbeh.2014.07.017>.
- Lemenager, T., Dieter, J., Hill, H., Hoffmann, S., Reinhard, I., Beutel, M., & Mann, K. (2016). Exploring the neural basis of avatar identification in pathological Internet gamers and of self-



- reflection in pathological social network users. *Journal of Behavioral Addictions*, 5, 485–499. <https://doi.org/10.1556/2006.5.2016.048>
- Lemenager, T., Neissner, M., Sabo, T., Mann, K., & Kiefer, F. (2020). “Who am I” and “how should I be”: A systematic review on self-concept and avatar identification in gaming disorder. *Current Addiction Reports*, 7, 166–193. <https://doi.org/10.1007/s40429-020-00307-x>.
- Li, D., Liao, A., & Khoo, A. (2011). Examining the influence of actual-ideal self-discrepancies, depression, and escapism, on pathological gaming among massively multiplayer online adolescent gamers. *Cyberpsychology, Behavior, and Social Networking*, 14, 535–539. <https://doi.org/10.1089/cyber.2010.0463>.
- Liew, L. W., Stavropoulos, V., Adams, B. L., Burleigh, T. L., & Griffiths, M. D. (2018). Internet gaming disorder: The interplay between physical activity and user–avatar relationship. *Behaviour & Information Technology*, 37, 558–574. <https://doi.org/10.1080/0144929X.2018.1464599>.
- Mancini, T., Imperato, C., & Sibilla, F. (2019). Does avatar’s character and emotional bond expose to gaming addiction? Two studies on virtual self-discrepancy, avatar identification and gaming addiction in massively multiplayer online role-playing game players. *Computers in Human Behavior*, 92, 297–305. <https://doi.org/10.1016/j.chb.2018.11.007>.
- Mancini, T., & Sibilla, F. (2017). Offline personality and avatar customisation: Discrepancy profiles and avatar identification in a sample of MMORPG players. *Computers in Human Behavior*, 69, 275–283. <https://doi.org/10.1016/j.chb.2016.12.031>.
- Morcos, M., Stavropoulos, V., Rennie, J. J., Clark, M., & Pontes, H. M. (2019). Internet gaming disorder: Compensating as a Draenei in world of Warcraft. *International Journal of Mental Health and Addiction*, 1–17. <https://doi.org/10.1007/s11469-019-00098-x>.
- Morse, J. (2008). Confusing categories and themes. *Qualitative Health Research*, 18, 727–728. <https://doi.org/10.1177/1049732308314930>.
- Petry, N. M., Rehbein, F., Gentile, D. A., Lemmens, J. S., Rumpf, H. J., Mölle, T., . . . , Auriacombe, M. (2014). An international consensus for assessing Internet Gaming Disorder using the new DSM-5 approach. *Addiction*, 109, 1399–1406.
- Przybylski, A. K., Weinstein, N., Murayama, K., Lynch, M. F., & Ryan, R. M. (2012). The ideal self at play: The appeal of video games that let you be all you can be. *Psychological Science*, 23, 69–76. <https://doi.org/10.1177/0956797611418676>.
- Sibilla, F., & Mancini, T. (2018). I am (not) my avatar: A review of the user–avatar relationships in massively multiplayer online worlds. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 12(3). <https://doi.org/10.5817/CP2018-3-4>.
- Sioni, S. R., Burleson, M. H., & Bekerian, D. A. (2017). Internet gaming disorder: Social phobia and identifying with your virtual self. *Computers in Human Behavior*, 71, 11–15. <https://doi.org/10.1016/j.chb.2017.01.044>.
- Smahel, D., Blinka, L., & Ledabyl, O. (2008). Playing MMORPGs: Connections between addiction and identifying with a character. *Cyberpsychology & Behavior*, 11, 715–718. <https://doi.org/10.1089/cpb.2007.0210>.
- Snodgrass, J. G., Clements, K. R., Nixon, W. C., Ortega, C., Lauth, S., & Anderson, M. (2020). An iterative approach to qualitative data analysis: Using theme, cultural models, and content analyses to discover and confirm a grounded theory of how gaming inculcates resilience. *Field Methods*, 32, 399–415. <https://doi.org/10.1177/1525822X20939749>.
- Stavropoulos, V., Dumble, E., Cokorilo, S., Griffiths, M. D., & Pontes, H. M. (2019). The physical, emotional, and identity user–avatar association with disordered gaming: A pilot study. *International Journal of Mental Health and Addiction*, 1–13. <https://doi.org/10.1007/s11469-019-00136-8>.
- Stavropoulos, V., Gomez, R., Mueller, A., Yucel, M., & Griffiths, M. D. (2020). User–avatar bond profiles: How do they associate with disordered gaming? *Addictive Behaviors*, 103, 106245. <https://doi.org/10.1016/j.addbeh.2019.106245>.
- Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2020). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry*, 0004867420962851.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19, 349–357. <https://doi.org/10.1093/intqhc/mzm042>.
- Trepte, S., & Reinecke, L. (2010). Avatar creation and video game enjoyment. *Journal of Media Psychology*, 22, 171–184. <https://doi.org/10.1027/1864-1105/a000022>.
- Tsai, C. C., & Lin, S. S. (2003). Internet addiction of adolescents in Taiwan: An interview study. *CyberPsychology & Behavior*, 6(6), 649–652. <https://doi.org/10.1089/109493103322725432>.
- Van Looy, J., Courtois, C., De Vocht, M., & De Marez, L. (2012). Player identification in online games: Validation of a scale for measuring identification in MMOGs. *Media Psychology*, 15, 197–221. <https://doi.org/10.1080/15213269.2012.674917>.
- Vasalou, A., & Joinson, A. N. (2009). Me, myself and I: The role of interactional context on self-presentation through avatars. *Computers in Human Behavior*, 25(2), 510–520. <https://doi.org/10.1016/j.chb.2008.11.007>.
- Whang, L. S. M., & Chang, G. (2004). Lifestyles of virtual world residents: Living in the on-line game “Lineage”. *Cyberpsychology & Behavior*, 7, 592–600. <https://doi.org/10.1089/cpb.2004.7.592>.
- Wolfendale, J. (2007). My avatar, my self: Virtual harm and attachment. *Ethics and Information Technology*, 9, 111–119. <https://doi.org/10.1007/s10676-006-9125-z>.
- World Health Organization. (2019). *International classification of diseases 11*. Retrieved from <https://icd.who.int/browse11/l-m/en>.
- You, S., Kim, E., & Lee, D. (2017). Virtually real: Exploring avatar identification in game addiction among massively multiplayer online role-playing games (MMORPG) players. *Games and Culture*, 12, 56–71. <https://doi.org/10.1177/1555412015581087>.
- Zhong, Z. J., & Yao, M. Z. (2013). Gaming motivations, avatar-self identification and symptoms of online game addiction. *Asian Journal of Communication*, 23, 555–573. <https://doi.org/10.1080/01292986.2012.748814>.

