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"I am the character, the character is me": A thematic analysis of the user-avatar relationship in videogames☆

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ABSTRACT

Far from merely being a tool to navigate a virtual world, individuals can often develop strong and complex relationships with their videogame characters. The present study examined the bond that can develop between a user and their avatar, as well as factors that can influence this relationship dynamic through the use of thematic analysis. Semi-structured interviews were carried out with 12 videogame players from the UK and US aged between 18 and 27 years. The results identified five major themes, comprising: (i) 'heterogeneity of game worlds'; (ii) 'avatar attachment'; (iii) 'game experiences affecting physical world behaviour and attitudes'; (iv) 'types of self in a virtual world' (with the sub-themes of 'actual self', 'idealised self', and 'utopian self'); and (v) 'game difficulty affecting user-avatar relationship'. The results showed gamers use their avatars as a means to insert a virtual version of themselves into the videogame or to attain a desired version of the self, sometimes including elements of fantasy. In addition, participants indicated that games with an advanced difficulty and avatar customisation appeared to facilitate stronger bonds to a character. Finally, several avenues of future research are discussed, in particular pertaining to the advancement of research relating to the Proteus effect.

Introduction

Videogames can take a variety of forms in terms of size, complexity and gameplay, from simple puzzle games to highly intricate and sophisticated simulations of physical world activities. Although it is not a necessary component of videogames, a feature that is often present is the avatar. An avatar in the context of videogames refers to the visual representation of the player and is the means with which they may interact with the virtual world or other players in the case of online or multiplayer games, and connects the physical self of the player to the virtual world (Nowak & Fox, 2018; Szolin et al., 2022a). In some cases, an avatar will be pre-designed by the game's development team, and may already have a substantial history and personality attached to it, such as the character 'Lara Croft' from the *Tomb Raider* series. In other cases, the avatar can be highly customised and personally designed by the individual gamer themselves (Cacioli & Mussap, 2014), with some videogames offering customisation options for almost every conceivable visual aspect of the avatar.

However, the avatar is not merely a means with which the gamer interacts with the virtual world in order to complete the in-game objectives, but can also take on a much more personal and important role for the gamer. For example, research suggests that instead of being a mere passive digital tool for navigating a virtual world, the avatar has the potential to become part

of a mutual social relationship with the user (Banks, 2015). More specifically, it is argued that in cases where an individual differentiates themselves from their avatar, there is the potential for the avatar to be seen as a social other leading to emotional intimacy with the virtual character (Banks, 2015). Furthermore, relationships with an avatar can also occur when the user considers the virtual character to be either an object, a representation of the gamer or part of a symbiotic partnership between user and avatar (Banks & Bowman, 2016). This research on user-avatar connections indicates that although the form and strength of the social relationship that occurs between user and avatar varies depending on how the user uses or views their avatar, these digital characters can nevertheless become members of authentic human relationships.

A further component of the user-avatar relationship concerns how the avatar can be used as a form of identity creation, management and exploration in videogames that allow personal avatar customisation (Szolin & Griffiths, 2022). For example, research indicates that gamers will often design their avatar to resemble their vision of their ideal self (Ducheneaut et al., 2009; Messinger et al., 2008). The term ideal self is rooted in self-discrepancy theory (Higgins, 1987) and refers to an individual's idea of how they would ideally like to appear, and this appears to be a common guiding motivation in gamers designing their avatars (Sibilla & Mancini, 2018). This use of the ideal self as an avatar template provides support for the personal relationship between a user and their avatar, indicating that these virtual world representations are more than just tools needed to play the videogame, but rather a way for the user to present a better and more idealised version of their self in a virtual world.

However, it should also be noted that user-intention is not the only guiding force in construction and design of an avatar. More specifically, McArthur (2018) posits that self representation through an avatar is guided by more than how a user wishes their avatar to appear, and is impacted by four key components: the self (how avatars are constructed to represent some form of self-identity); affordances (actual and perceived availability of customisation options); aesthetics (boundaries imposed by developers to ensure alignment with the intended game world experience, such as limiting playable races); and co-situated play (self-representation choices affected by other players through a desire to play together, such as choosing the same faction or team) (McArthur, 2018). This research suggests that while an individual has control over the appearance of their avatar, this is tempered by a number of potentially limiting constraints imposed by the game's system, design choices of the developers, and even the desire for co-operative gameplay.

In addition, research also indicates that transferring elements of the gamer's self to their avatar not only comprises physical characteristics, but also occurs in regard to a gamer's personality traits and behaviour. For example, research investigating personality traits and behaviour of both gamers and their avatars indicates that avatars will often display similar characteristics in game to those of the player outside of the game (Sibilla & Mancini, 2018), albeit less inhibited (Messinger et al., 2008) and, similar to physical appearance, more in line with their ideal version of their self (Bessière et al., 2007). This research shows that gamers will frequently use a template of their ideal self to guide both the visual design of their avatar as well as how the avatar behaves within the videogame, which demonstrates the extent to which gamers can mould and influence their virtual world avatar. However, there is a burgeoning area of research that argues that the process of a gamer influencing their avatar may in fact operate in both directions, and that there is potential for the avatar to influence the gamer in a phenomenon termed the 'Proteus effect'.

The Proteus effect

The term 'Proteus effect' (PE) in the context of videogames refers to the phenomenon whereby gamers modify their behaviour or attitudes to align with the perceived characteristics of their in-game avatar. More specifically, it is suggested that the PE occurs when a gamer makes specific inferences based on observable characteristics or attributes of their avatar and then adapts their in-game behaviour to align with these expected behaviours (Yee & Bailenson, 2007). For example, research has indicated that individuals who control an avatar that is deemed to have a 'normal' weight are more active during a sports game than individuals who control an 'overweight' avatar (Peña & Kim, 2014), and that individuals who control taller avatars act with greater confidence in-game compared to shorter avatars (Yee & Bailenson, 2007).

However, while the PE may potentially result in notable changes to the gamers' behaviour and attitudes, the strength and likelihood of this phenomenon occurring in a videogame may often be influenced by a number of factors (Szolin et al., 2022a). For example, research has indicated that the PE is more likely to occur when an individual is able to customise their avatar (Ducheneaut et al., 2009; Ratan & Sah, 2015) due to the greater degree of avatar identification and avatar embodiment that this allows, which have all been identified as factors vital for the occurrence of the PE (Li & Lwin., 2016; Song et al., 2014; Ratan & Dawson, 2016).

Furthermore, even the graphical fidelity of a videogame has indirectly been shown to potentially affect the strength of the PE through factors such as immersion (e.g., the feeling of being present in a videogame due to technology) and avatar embodiment (Gorisse et al., 2019).

Moreover, in addition to affecting in-game behaviour and attitudes, research has also found that the PE and the influence of the avatar can extend beyond the virtual world and impact the gamer outside of the game (Peña & Hernandez Perez, 2020; Yee & Bailenson, 2007). For example, Peña et al. (2018) – and the later replication by Peña and Hernandez Perez (2020) – found evidence that participants who played the videogame *Papers, Please* (a dystopian immigration officer simulation game) reported a decreased intention towards helping immigrants after gameplay. The accumulated research relating to the PE provides strong indication that the relationship in terms of influence between a gamer and their avatar is multi-directional, and that although gamers may sculpt avatars to resemble some facet of themselves, unbeknownst to the gamers, their avatar may also be shaping their behaviour and attitudes both during and after gameplay. Furthermore, research on the PE indicates that these changes to behaviours and attitudes can be substantial (Szolin et al., 2022a), such as the occurrence of stereotypical gender-conforming behaviours aligning with a user's avatar's gender over the existing gender identity of the gamer (Yee et al., 2011). However, despite growing research relating to the PE in the context of videogames, research has to date been singularly concentrated on quantitative methods of analysis and no studies have attempted to explore this specific topic using qualitative methods as a way of getting more in-depth data regarding this behaviour.

The present study

The aim of the present study was to explore how gamers experience their user-avatar relationship in videogames, with a particular focus on elements relating to the PE both during and after gameplay using thematic analysis. Thematic analysis has previously been used in a number of studies relating to various aspects of videogame playing and videogame avatars, including experiences of female gamers (McLean & Griffiths, 2013; McLean & Griffiths, 2018); attitudes, feelings, and experiences of online gamers (Hussain & Griffiths, 2009); motivation and the game-self (Kartsanis & Murzyn, 2016); experiences relating to videogame challenge (Petralito et al., 2017); videogame 'modding' (i.e., player alterations to videogame data files to change aspects of the game; Curtis et al., 2022); reactions to self-representational avatars (Baysden et al., 2021); problematic gamers' player-avatar interactions (Green et al.,

2020); and Game Transfer Phenomenon (GTP – i.e., transfer of virtual gaming experiences to the physical world through sensory perceptions, mental processes, and involuntary changes to behaviour or automatic actions); Ortiz de Gortari et al., 2011). Although these studies have provided valuable insight into various aspects of videogames and the user-avatar relationship, to date there has not been any attempt to specifically explore the PE in videogames using qualitative methods, despite the accumulated quantitative research evidence demonstrating that this phenomenon can have a notable effect on gamers both during and after gameplay.

In particular, there are a number of quantitative studies that have explored the strength and likelihood of the PE occurring across a number of different areas relating to behaviour and attitudes (Szolin et al., 2022a), and this helped to codify and define this research area. However, while these quantitative studies provide evidence of how the PE may manifest, the subjective experiences of individuals have been left unexplored in relation to this phenomenon. More specifically, qualitative research that explores gamers' personal experiences of the PE as well as the user-avatar relationship in general may complement the existing quantitative research and help provide a more detailed and nuanced account of this phenomenon to further understanding and knowledge of this research topic. Therefore, the present study attempted to address this gap in the literature by investigating the occurrence of the PE in the context of videogames using qualitative methods of analysis, as well as exploring the wider aspects of the user-avatar relationship in videogame playing.

Method

Participants

A total of 12 participants were recruited for the present study, with an age range of 18-27 years and a specific requirement that they have a history of videogame use. Basic demographic information for these participants included: place of residence (six based in the UK, and six based in the US); gender (seven males, one female, four transgender females, and one non-binary); GD status (three currently undergoing treatment and nine not seeking/requiring treatment); and employment status (eight students, one employed and three unemployed). Participants' characteristics are summarised in Table 1. All the participants indicated that they had routinely been playing videogames from early childhood to the present time, with the exception of three participants who were currently undergoing treatment for Gaming Disorder

at a US clinic for technology addiction and therefore had not played videogames during the course of their current treatment.

Participants were recruited primarily through convenience and snowball sampling methods using online forums to advertise the study, and were each awarded a £10 (or equivalent US dollar amount) *Amazon* voucher for their participation. In addition, three participants were recruited directly through volunteer sampling at a US clinic for treating technology addiction.

Table 1. Participant characteristics

Participant	Age	Nationality	Gender	GD Status	Employment status
P1	21	US	Male	Currently undergoing treatment	Student
P2	19	US	Male	Currently undergoing treatment	Unemployed
P3	23	US	Male	Currently undergoing treatment	Unemployed
P4	20	US	Male	Not seeking/requiring treatment	Student
P5	21	US	Male	Not seeking/requiring treatment	Student
P6	27	US	Male	Not seeking/requiring treatment	Student
P7	18	UK	Female	Not seeking/requiring treatment	Student
P8	18	UK	Male	Not seeking/requiring treatment	Student
P9	21	UK	Non-binary	Not seeking/ requiring treatment	Student
P10	21	UK	Transgender female	Not seeking/ requiring treatment	Employed
P11	20	UK	Transgender female	Not seeking/requiring treatment	Student
P12	22	UK	Transgender female	Not seeking/requiring treatment	Unemployed

Procedure

After initial contact, each participant was provided with a participant information sheet and asked to sign a consent form before any interviews were conducted, with further verbal consent being obtained during the interview. The interviews were semi-structured, and were conducted online through the *Microsoft Teams* video call function, with each interview lasting between 30 and 60 minutes.

Each interview began with the interviewer reading through the information sheet and consent form with the participant, and provided them with an opportunity to ask any questions they may have about the interview process and study. Then, and in addition to the previously acquired written consent, participants were asked to confirm their name and that they agree to be part of the study. The next phase of the interview involved asking participants the questions from the interview schedule. As these interviews were semi-structured, the interview schedule was used as a guide, and any new or branching topics brought up by the participants were appropriately investigated and explored. After each interview finished, every participant was fully debriefed during the video call as well as being provided with a debrief sheet through email. All interviews were recorded using both *Microsoft Teams* as well as an external voice recorder, and then transcribed and analysed using the *N-Vivo 12* data analysis software package.

Interview schedule

The interviews were guided by a semi-structured interview schedule. This interview schedule comprised questions that encouraged participants to recall their experiences of videogame use and reflect on their relationship with their avatar. In particular, to probe these user-avatar experiences, the interview schedule used a number of questions found in the Self-Presence Questionnaire (SPQ; Ratan & Hasler, 2009). The SPQ explores the extent to which individuals experience a sense of self-presence within videogames and through their avatar to provide a numeric score to represent the user-avatar relationship, with self-presence referring to the extent to which an individual feels extended into or represented within a virtual world and synchronised with their avatar (Ratan & Hasler, 2009). An example of a question used in the SPQ was *"When playing the game, how much do you feel like your avatar is an extension of your body within the game?"* In addition, a key aim of the study was to specifically investigate the experiences of the PE in the context of videogames, and a number of questions included in the schedule asked participants to discuss and reflect on whether time spent controlling an avatar influenced their attitudes or behaviour during or after videogame use. An example of a PE questions used in the study was *"Does your avatar ever affect your behaviour inside the game?"*

Ethics

Approval for the study was provided by the research team's university ethics committee and the study adhered to the Helsinki Declaration guidelines. Each participant provided both verbal

and written consent to be involved in the study, with all appropriate supplementary materials being provided by the researchers (e.g., participant information sheets, consent forms, debriefing sheets). Included with this information were: aims of the research; how the data would be used; contact information for the researchers; guidance on how to obtain support or help post-interview; and the participants' rights, including their right to withdraw their data and the procedure for doing so. Each participant was provided with a pseudonym, and all other identifiable information (e.g., locations, names of relatives) in the transcripts were appropriately changed in order to protect the participants' identities and ensure their anonymity.

Data analysis

The data collected in the present study were analysed using thematic analysis, an approach that can be used to explore the experiences and perspectives of individuals within and across rich datasets. Thematic analysis was selected because it provides a highly flexible method of analysing qualitative data in terms of both practicality (i.e., sample size, data collection method, research question) as well as theoretical frameworks (Clarke & Braun, 2017), and allows summation of qualitative data in the form of themes that highlight individuals' lived experiences.

In particular, the present study was guided by a constructionist epistemology which recognises the importance of both repeated occurrence of a theme alongside the meaningfulness of the theme from the standpoint of the participant as well as the researcher and the research aims. In addition, this present study's data are analysed with a combination of both a deductive theory-driven approach as well as an inductive data-driven approach, as is often found in thematic analysis studies (Byrne, 2021). More specifically, although this study predominantly employed an inductive approach to analysis through the use of open-coding and attaching weight to individual participant and data meaning, deductive analysis was also used to align data and themes to the research aims of the study.

Analysis of the data was guided by the six-phase approach to thematic analysis detailed by Braun and Clark (2012). After data collection, the first phase of thematic analysis involved the first author reading through the interview transcripts several times in order to become familiar with the data as well as making initial notes on the data. The second phase involved generating initial codes from the datasets in order to identify and provide a label for any parts of the data that appear to be relevant to the research question of the study, and occurred at both a semantic

and latent level. In particular, content was initially considered at a descriptive surface level as communicated by the participants as a precursor to more interpretative analysis that explores the deeper meaning of the data content and guided by the researcher's active role in analysis and interpretation of data. The third phase involved developing initial themes, and this was achieved by looking for areas of overlap and patterns in the codes. More specifically, codes were examined across datasets to explore where and how they may be clustered before organising these into themes that encapsulated an overarching broader topic relevant to the research questions. Finally, the themes identified in the third phase were organised into a thematic table outlining these themes in preparation for the fourth phase and to aid in viewing how these themes related to the overall data and any connections between themes. The fourth phase involved reviewing these identified themes in the context of the other potential themes, the overall data set and research questions as well as individual codes. In particular, progressing through the fourth phase resulted in some themes either being collapsed or split into sub-themes based on how they connected with the other themes and overall narrative presented through the data sets. Following on from this, the fifth phase involved defining and naming the themes. In more detail, the first author reviewed and defined the identified themes to ensure they were focused, relevant to the research questions and overall narrative of the data without repetition and substantial overlap between themes, as well as providing a cohesive and clear story representative of the data. Finally, the sixth phase involved the production and writing up of the study.

As a final note, it is worth briefly discussing the positionality and experiences of the authors as this necessarily influenced this study from initial conceptualisation through to data collection and analysis. All authors were actively involved in videogame research at the time of writing, and all four authors have varying levels of personal experience with playing videogames. These academic, professional and personal experiences meant that researcher engagement with the data occurred at a more meaningful and deeper level, and guided later interpretation and synthesis with prior theory and literature.

Results and preliminary discussion

Five main themes were identified through analysis of the interview transcripts, as well as several sub-themes. These comprised: (i) 'heterogeneity of game worlds': (ii) 'avatar attachment'; (iii) 'game experiences affecting physical world behaviour and attitudes'; (iv)

‘types of self in a virtual world’ (with the sub-themes of ‘actual self’, ‘idealised self’, and ‘utopian self’); and (v) ‘game difficulty affecting user-avatar relationship’. These themes, their frequency and details of contributing participants are summarised in Table 2.

Table 2. Theme details

Theme	Number of supporting extracts	Participants supporting the theme
Heterogeneity of game worlds	28	P1, P2, P3, P7, P9, P10, P11, P12
Avatar attachment	22	P1, P2, P3, P4, P5, P7, P8, P9, P10, P11, P12
Game experiences affecting physical world behaviour and attitudes	23	P4, P5, P6, P7, P8, P9, P10, P11, P12
Types of self in a virtual world sub-theme: Actual self	13	P1, P3, P4, P5, P6, P10
Types of self in a virtual world sub-theme: Ideal self	27	P1, P4, P6, P7, P8, P10, P11, P12
Types of self in a virtual world sub-theme: Utopian self	6	P7, P8, P9, P12
Game difficulty affecting user-avatar relationship	17	P1, P2, P3, P5, P8, P9, P10, P11, P12

Theme 1: Heterogeneity of game worlds

The first theme identified from analysis of the interview data relates to the heterogeneity of videogame worlds, and how different game worlds can lead to notable differences in how gamers connect with their avatar and the degree of immersion they experience while playing videogames. This is highlighted in the following extract:

> Extract 1: "*I think it depends on the game. It depends on the exact sort of part of the game*" (P10).

The participants detailed a number of factors that could affect how immersed they felt within the game world and the connection they experienced with their videogame avatars. Among these factors were the gameplay mechanic of in-game consequences of player actions, as detailed in the following extract:

> Extract 2: "*Consequences for your actions-my actions is an important thing…It feels like the decisions I'm making matter and have a real effect on both the world I'm playing a game in and also the avatar itself, like the decisions I make as the avatar affect what happens to them*" (P9).

This extract shows that the incorporation of some form of observable reaction to the players' actions, be it through changes to the avatar or even the game world itself, are seen as an important element of videogames, and the inclusion of this mechanic can improve the level of immersion and attachment to an avatar experienced by gamers. More specifically, this extract indicates that videogames that attach weight and consequence to the decisions made by the player's character through the use of a dynamic game world that adapts to these in-game choices provides a more meaningful experience for the individual than games that do not include this mechanic. However, this is not the case for all videogames, and even seemingly similar videogames from the same franchise can provide very different experiences as highlighted by the following extract:

> Extract 3: "*I think for [Fallout] New Vegas I was just more invested in the mechanics of the game and like trying to do well in it because it was more captivating, in Fallout 4 I just very much took the route of 'let's see how much fun I can have with this', and eventually when I went to go and do like the main story it started feeling like a slog…it felt like they had gutted a lot of the cool systems that they had in New Vegas because they went back to the Fallout 3 way of doing things*" (P3).

This extract shows that even in a series of videogames with very similar game mechanics, minor differences in the implementation of these in-game systems and mechanics can have a significant impact on the experience of the gamer. In particular, although the videogames *Fallout 3*, *Fallout: New Vegas* and *Fallout 4* (i.e., all post-apocalypse action role-playing games) contain some variations between titles (e.g., new gameplay mechanics and improved graphical fidelity with newer releases), the similarities between these games arguably far outweigh the differences. This suggests that viewing videogames homogenously can be problematic as even videogames within the same franchise can invoke notably different reactions in regard to player enjoyment and desire to play, and consequently factors such as immersion, sense of presence within the game world and avatar relationship strength. Furthermore, an additional aspect that can affect game experiences and an individual's relationship with their avatar relates to player input in the form of videogame controls, as

highlighted in the following extract:

> Extract 4: *"I suppose also in some ways, how the game controls as well, sort of how natural it feels to control this avatar and be this person. If it feels very disjointed and doesn't quite do what you want, it can really bring me out of it"* (P9).

Extract 4 shows that how an individual controls their in-game avatar can affect the degree of immersion they experience while playing a videogame. More specifically, this highlights how factors such as controller input and responsiveness can have a notable impact on an individual's experience within a videogame world, and thereby affecting elements relating to the development of a user-avatar relationship, such as immersion. This again shows that viewing even relatively similar videogames as homogenous may not be appropriate, and that elements of videogame design ranging from in-game systems that track and respond to player decision-making to controller input can have significant effects on factors such as immersion as well as the user-avatar relationship.

Theme 2. Avatar attachment

The next theme identified from the data relates to the process of a gamer developing a sense of attachment to their avatar. Although videogames often share a number of similarities in terms of content with other forms of media, such as films and books, a key separating and distinguishing feature relates to the interactivity inherent in videogames (Bowman et al., 2012). Gamers are often given substantial control over their avatars in a number of ways which can help develop a sense of attachment between a user and their character, including customisation options, and this is highlighted in the following extract:

> Extract 5: *"It's fun to customise them. It's fun to make them look cool…like how you want them to look, and you do begin to form a bit of an emotional connection"* (P3).

In Extract 5, the participant discusses their interactions with their avatar through character customisation. More specifically, the participant details the pleasure and enjoyment they gain from designing an avatar that visually displays characteristics the participant considers "*cool*" as well as having the control to craft a character in the manner they desire. The participant expands on this point, and suggests that through this character design process, they form an emotional connection to their avatar. Through this character customisation, it appears the participant developed a sense of connection and attachment to their avatar. Customisation of an avatar can be instrumental in users becoming immersed in a virtual world and developing a

connection and/or an individual identifying with their avatar (Birk et al., 2016; Mohd-Tuan et al., 2017), and this is further highlighted in the following extract:

> Extract 6: *"Yeah definitely, a character you've created. You must be attached to it because it reflects you, just in the virtual world"* (P5).

In Extract 6, the participant stated that they felt a sense of attachment to their avatar, and that this was because the avatar reflected the participant within the virtual world. In particular, the participant described how designing an avatar created not only a sense of ownership over the avatar, but in being afforded the opportunity to customise their appearance, the participant created a representation of themselves within the virtual world. Extract 6 suggests that character customisation may allow the relationship between a user and their avatar to transcend beyond merely that of an individual using a tool to navigate a virtual world, but instead allows the user to insert themselves within the virtual world by virtue of this deepened user-avatar relationship structure. Through this, a greater sense of attachment to an avatar can develop.

Theme 3: Game experiences affecting physical world behaviour and attitudes

The next theme identified from the data concerns experiences within a videogame affecting the player in the physical world. More specifically, this theme is concerned with how controlling an avatar can lead to changes in behaviour or attitudes outside of the videogame. While it is clear that the user can influence their avatar within a videogame, this relationship can work both ways and an avatar can likewise influence the gamer. This is highlighted in the following extract:

> Extract 7: *"So sometimes the avatar has a very tasty hairstyle. So because it is in the virtual world I try to bring it in the real world, so you kind of go to the barber shop and you just run that hairstyle, yeah. And two, take for example the clothing styles, sometimes the clothes are just nice and decent, so you just try to go out and pick some just to try an imitate the avatar"* (P5).

In Extract 7, the participant describes how playing as their videogame avatar can influence their physical world behaviour. In particular, the participant discusses how controlling an avatar with a desirable or "*tasty*" hairstyle can lead to them trying to bring this out of the virtual world and attempting to replicate this in a physical world hair salon. Furthermore, this is a behaviour that is not restricted to hairstyling, and the participant also discusses how seeing

their avatar in particular clothes can then lead to them attempting to imitate that look in the physical world.

This behaviour pattern may be interpreted in one of two ways. Firstly, mimicking the appearance of a virtual world avatar in the physical world in the manner described by this participant may be viewed as the avatar purposely being used as a template or model on which the user can try out different looks to find something they like before then replicating this in the physical world. Alternatively, the user may have chosen these customisation options for their avatar solely because they felt it looked good on the avatar while playing the videogame, and that the desire to mimic this occurs later after controlling their avatar for some period of time. While these two explanations may appear similar, the key difference relates to intention: either the participant knowingly chose to use their avatar as a model for clothing and hairstyle, or the participant was influenced by their avatar to replicate their appearance. While it is unclear from this extract alone which of these reasons caused the behaviour, the direction of this behaviour pattern is illustrated more clearly in the following extract:

> Extract 8: *"I think the primary example would be like I found out stuff in real life I like. So, for example, I've been really into astrology and herbal-well botany. I occasionally read science texts about plants, like harvest seasons, crop circles. All that stuff wouldn't have come naturally to me if I hadn't taken that interest in playing as this avatar"* (P8).

In Extract 8, the participant discusses how controlling a videogame avatar has led to changes in their physical world behaviour. More specifically, the participant details how they have previously played as an avatar that engaged in in-game activities relating to botany and astrology, and that this then influenced them to exploring these subjects in the physical world. On the surface, and similar to the previous extract concerning hairstyling and clothes, this may simply appear to be drawing inspiration from behaviours and appearance exhibited by an avatar and replicating this in the physical world. However, arguably, this may be considered as a potential consequence of the PE.

The PE suggests that individuals make observations about their avatar based on appearance and other observable cues, and this will then influence the gamer's behaviour and attitudes either within the game world or in the physical world after they have finished playing the game (Yee & Bailenson, 2007). In these described cases, it may be interpreted that the participants viewed observable characteristics of their avatar (e.g., a scholar of botany or wearing particular

clothes) and then after playing as these avatars, the participants were influenced into replicating this behaviour (e.g., learning about botany or buying particular clothes).

While these links to the PE are somewhat tenuous, it does nevertheless potentially indicate an interesting aspect of the user-avatar relationship in videogames. In particular, these described cases of being influenced by an avatar and then imitating this behaviour in the physical world signals that relatively minor aspects of videogames, such as clothing customisation and in-game activities, can lead to observable and notable changes to an individual's physical world behaviour. However, in addition to avatar-influenced physical world behaviour changes relating to the PE, extended avatar use can also lead to perceptual changes in the physical world caused by associations between physical world stimuli and videogame experiences in a process referred to as Game Transfer Phenomenon (GTP; Ortiz de Gortari et al., 2011). This is highlighted in the following extract:

> Extract 9: *"There are times in games after I've just been foraging for stuff and I'll be going out down to town and I'll be looking in trees for birds' eggs and stuff like that"* (P7).

In Extract 9, the participant discusses how after playing particular types of videogames that involved elements relating to the gathering of materials in order to meet in-game objectives, they experienced an altered sense of perception relating to physical world stimuli. More specifically, the participant detailed that their experiences within the videogame continued into the physical world, and led to automatic thoughts relating to carrying out the same behaviours that they would in the virtual world. In this case, the participant began to see physical world trees within the context of the videogame world, namely that these trees may have presented an opportunity to gather relevant materials for their virtual character.

The experiences described by the participant in this extract appear to align with GTP (Ortiz de Gortari et al., 2011). GTP refers to the transfer of videogame experiences into the physical world typically after intensive use, and may include: auditory, tactile, and visual hallucinations; dissociative experiences; automatic thoughts or actions; altered perceptions of physical world stimuli; and changes to behaviour (Ortiz de Gortari et al., 2016; Ortiz de Gortari & Diseth, 2022). More specifically, GTP occur when an individual is exposed to a videogame virtual setting and begins to experience involuntary disruption or changes to their senses, thoughts and behaviours that permeate from the videogame. For example, an instance of GTP occurring may be when an individual sees images from a videogame when blinking or trying to fall asleep.

These identified effects of GTP are characterised as involuntary or non-volitional, and the likelihood of experiencing this phenomenon is positively associated with greater length of exposure to a videogame (Ortiz de Gortari & Diseth, 2022). Furthermore, GTP are mostly considered a positive experience by individuals, and may occasionally be purposely induced for relaxation purposes, although it should be noted that this phenomenon may induce distress in some individuals particularly in regard to dissociative experiences (Ortiz de Gortari & Diseth, 2022).

Based on the above extract, the participant appears to be demonstrating elements relating to GTP, namely through their automatic thoughts and altered perceptions of physical world stimuli (i.e., trees as a source of in-game material gathering). In particular, the participant described how their experiences in the physical world were altered and influenced by their videogame experiences. In the example of P7, through GTP, the participant appeared to show convergence or even harmonisation with their virtual character and assimilation of videogame objectives to physical world experiences. This extract, alongside those previously discussed, indicates that the avatar can be a powerful force in affecting physical world attitudes and behaviour, ranging from influencing an individual's physical world appearance and interests to altering perceptions of everyday stimuli.

Theme 4: Types of self in virtual world

Another important element to the user-avatar relationship related to how an individual designed their virtual world character. Avatar customisation and the degree of similarity between character and player appeared to vary significantly between different interview participants, as did the motives underlying these decisions. In particular, these different ways of customising an avatar are considered from the perspective of self-discrepancy theory (Higgins, 1987), a framework that is often used in exploring the user-avatar relationship in videogames (Szolin et al., 2022a), and are divided into the subthemes of (i) actual-self, (ii) idealised-self, and (iii) utopian-self.

Subtheme 4.1: Actual self

Firstly, the subtheme of 'actual self' relates to how an individual may design their videogame character to visually appear as similar to the physical self of the gamer as possible, using the actual-self of the gamer as a template when choosing the appearance of the avatar. This design choice is highlighted in the following extract:

> Extract 10: *"For my character, first of all I go with mostly I do like a virtual appearance of me, -I'm not a big bodied person so I'll go with something with a small body. Then with the type of hair I like to choose a hairstyle that is similar to mine, and clothes like the clothes I like are sneakers and t-shirts and trousers. So mostly I do choose the appearance of the character according to how I do in real life"* (P4).

In Extract 10, the participant discusses how they make avatar-related design choices based on their own physical world appearance. More specifically, the participant considered themselves as "*not a big bodied person"*, and so purposely chose to create an avatar that was of a smaller stature to align with their actual self outside of the virtual world. Furthermore, and of particular note, the participant not only selected parallel anatomical aspects such as body build or height, but also made design choices aimed at mirroring their external and controllable appearance such as haircut and clothing preference. This indicates that for this participant, the crux of similarity between themselves and their avatar does not end with physical world anatomical comparisons, but also includes elements of their personality and identity expressed through aspects such as clothing and haircut preferences. Clearly, designing an avatar that is representative of their physical world actual-self was important to some participants, and the reasons for this are explored in the following extract:

> Extract 11: "*For me you can alter the appearance, so I want to experience that feeling that you're in the virtual world, so making the avatar looking close to my appearance is very special because I can see myself in the virtual world. So yeah, it's fun"* (P6).

In Extract 11, the participant discusses why they chose to design their virtual world avatar to align with their physical world actual-self. In particular, the participant detailed that designing an avatar to look as similar to themselves as possible provided a sense of presence in the virtual world, and that having that feeling of personally being in the videogame world was something the participant actively strived for because it forms an important part of their enjoyment of the gaming experience.

Designing an avatar to resemble a gamer's physical world actual-self is not the most common form of avatar design, with this usually being based on the idealised-self (Sibilla & Mancini, 2018). Furthermore, the tendency for using this particular form of avatar is highlighted in Table 2, where the most commonly described form of self-representation through an avatar is the ideal-self. However, research has indicated that controlling a character based on the gamer's self representation can be related to increasing an individual's sense of presence in a videogame

and avatar embodiment (Gorisse et al., 2019). Furthermore, it has been posited that this choice of character design can reflect the gamer's attitudes towards the virtual world. More specifically, research suggests that gamers who control an avatar that is similar to their physical world self may view the virtual world as an extension of the physical world rather than distinctly separate (Costello, 2012; Parmentier & Rolland, 2009). This means that gamers who design an avatar to reflect their actual-self in the physical world may choose to do this in order to gain a greater sense of presence in the virtual world, and this forms a part of their enjoyment of playing videogames. In addition, designing an avatar in this manner may also reveal how a gamer views the virtual world in relation to the physical world, and may consider each to be an extension of the other.

Subtheme 4.2: Idealised self

The next subtheme concerning types of self in the virtual world related to the idealised self. The idealised self in the context of avatar creation refers to designing a virtual world character that reflects how the user would ideally like to be, and this is highlighted in the following extract:

> Extract 12: *"Because my avatar is, like I say, an improved me, how I always dream of looking. So, I can say that I have this feeling that I wish I could be like my avatar. I don't know if it's emotional or something like that"* (P6).

In Extract 12, the participant describes their avatar as an improved version of themselves, and visually appears as possessing features and qualities that the participant would like to have. Furthermore, the participant expands on this feeling of the avatar being an improved version of themselves by stating that they wish they could be like their avatar.

Self-discrepancy theory (Higgins, 1987) posits that individuals experience distress when their actual and ideal selves differ greatly from each other, and that individuals are motivated to close this distance between the different versions of the self in order to reduce this discomfort. In the context of videogames, designing an avatar to be an idealised version of one's self provides a relatively easy way to achieve parity between an individual's actual and ideal self. More specifically, creating and customising an avatar in a virtual world is a quick and relatively simple process, whereas addressing one's perceived physical world inadequacies related to their actual self in order to close the distance to their ideal self requires substantially more time and effort. Therefore, videogames can be seen as providing a means for a gamer to create a virtual version of their self that conforms to their vision of an idealised self that would be

difficult to accomplish in the physical world. This idea of using a videogame avatar as a means of becoming closer to one's idea of an idealised self is further highlighted in the following extract:

> Extract 13: *"I think a lot of it was just like for me a lot of the MMORPG (Massively Multiplayer Role-Playing Game) experience was like, for my pattern at least with it, was like making these characters were just like the idea of who I wanted to be…So basically being able to like get closer to that ideal than I am in real life"* (P1).

In this extract, the participant discusses how a key motivation for playing online videogames was to create a character that represented who they wanted to be in the physical world. The participant elaborated on this point, and detailed that their incentive for this behaviour was to "*get closer to that ideal than I am in real life"*. This extract aligns with the previously discussed self-discrepancy theory explanation for creating an idealised self-avatar, and suggests that gamers may create avatars in this manner as a means of closing the distance between their actual and idealised selves.

Furthermore, research has indicated an association between using an idealised avatar and factors such as depression and low self-esteem (Bessière et al., 2007: Sibilla & Mancini, 2018). This may mean that individuals who demonstrate some form of distress occurring as a result of the discrepancy between their ideal and actual selves in the physical world, such as depression or low self-esteem, may choose to create an avatar in a videogame to represent their ideal self as a means of addressing these negative feelings. In this way, videogames can be seen as providing an easily accessible virtual world that is free from the constraints of the physical world, and allow individuals to explore a version of their idealised self. However, beyond issues relating to depression and low self-esteem, idealised avatar creation can also be used as a means of addressing issues such as gender dysphoria, and this is discussed in the following extract:

> Extract 14: *"So myself, I'm part of the transgender community in way, not the typical way, so for me a lot of videogame customisation is often about kind of representing what you wished you looked like in a way"* (P11).

In Extract 14, the participant describes how customising a character in a videogame provides a way for them to create an image of how they would ideally like to appear as in the physical world, and that their transgender identity may contribute to this form of avatar design choice. In particular, this extract indicates that the participant feels that videogames provide a means

for transgender, gender diverse or gender-questioning individuals to create a virtual representation of how they wished they could be in terms of appearance through creation of their avatar, and that this may be seen as a form of gender exploration in a virtual world.

Previous research has indicated that videogames can provide a relatively safe environment for individuals to test out and explore their gender identity (Griffiths et al., 2016; Hussain & Griffiths, 2008; Morgan et al., 2020), and that using videogames can have therapeutic benefits for this community (Arcelus et al., 2017; Strauss et al., 2017). Potentially, an element of these therapeutic benefits may relate to self-discrepancy theory (Higgins, 1987), and that videogames provide a means for transgender, gender diverse or gender-questioning individuals to obtain a degree of parity between their actual and ideal selves through avatar creation and customisation. More specifically, transgender, gender diverse or gender-questioning individuals may not only design their videogame avatar as a means of exploring their gender identity before coming out in the physical world (Morgan et al., 2020), but may also use their avatar as a template to design and virtually inhabit their vision of their ideal self and thereby reduce the distress that occurs through the discrepancy between their actual and ideal selves.

Subtheme 4.3: Utopian self

The final sub-theme relating to types of self in the virtual world concerns 'utopian avatars'. Utopian avatars are described as substantially transformed versions of the user, and possessing attributes that are not possible to acquire in the physical world (Mancini et al., 2019: Sibilla & Mancini, 2018). For example, avatars based on an individual's idealised self may include changes relating to an individual's desire for greater muscle mass or lower body weight. A utopian avatar may be based on an individual's desire to appear as a fantasy race such as an elf. This desire to create an avatar that takes on the qualities of a fantasy race is highlighted in the following extract:

> Extract 15: *"Not necessarily a human, I've always went for elf...I don't know why. Maybe it's because I look good in elf ears, but I don't know. I've always felt that to be a bit more accurate"* (P12).

In Extract 15, the participant discusses the appearance of their avatar. In particular, the participant notes how they have a tendency to select elves as the race for their avatar, and that this is due to the physical attributes of elves, such as their ears (e.g., long and pointed), as being more desirable and looking better than human ears. Furthermore, the participant expands on this point and details that the look of elves feels more accurate to them than a human

appearance. This appears to mirror the process and motivations relating to idealised self-avatar creation in which an individual creates an avatar to align with their idea of their idealised self, although in this case, encompassing attributes that extend beyond the realm of possibility in the physical world. This point of creating a utopian avatar is further discussed in the following extract:

> Extract 16: *"I think it's somewhere between my ideals and something completely separate because it's a cat girl. You can't exactly create those in real life so it's somewhere between an ideal as in ideally what looks like every day and something completely separate"* (P8).

In Extract 16, the participant describes their avatar as a "*cat girl*", and that this avatar contains elements of both the fantasy world and physical world. More specifically, the participant acknowledges that a "*cat girl*" neither conforms to what is achievable in the physical world, nor is this creation pure fantasy. Instead, this avatar contains idealised attributes that are present in the physical world and then extended beyond this into the world of fantasy to incorporate elements of both. In doing so, the participant has created a virtual representation of themselves that is both an idealised self and a utopian self.

The extant literature often describes utopian avatars as being separate from idealised self-avatars and should be unaffected by factors such self-discrepancy theory due to this distance between versions of the self (Mancini et al., 2019). More specifically, an idealised avatar considers how a person wishes to be, whereas a utopian avatar possesses characteristics that the user could not have in the physical world (Mancini et al., 2019). However, Szolin et al. (2022a) discuss how this may not be an accurate way of viewing utopian avatars. More specifically, Szolin et al. (2022a) suggest that in the context of videogames, utopian avatars and idealised avatars may functionally be the same, and that an individual's idea of their ideal self does not necessarily have to conform to what is achievable purely in the physical world, but can contain elements of the fantasy world. With this in mind, the functions and motivations of using a utopian avatar may be largely similar, if not directly analogous, to idealised avatar use in the context of videogames.

Theme 5: Game difficulty affecting user-avatar relationship

The final theme identified relates to how the difficulty or challenge of a particular videogame can affect the degree to which the participants' felt immersed and connected to either the virtual

world or their videogame avatars. This feeling of connection is highlighted in the following extract:

> Extract 17: "*In Dark Souls you make a character and because those games are so hard you really kind of get used to every action being very natural, just like an extension of yourself, because it kind of needs to be. You need to make a lot of very quick decisions or be punished severely for it*" (P9).

In Extract 17, the participant makes reference to the videogame *Dark Souls* (i.e., an action fantasy role-playing game), a franchise notorious for its high level of difficulty and punishing gameplay. However, rather than seeing this as negatively affecting enjoyment of this game, the participant considers this high level of difficulty as instrumental in their avatar being seen as an extension of themselves and subsequent feeling of presence within that virtual world. This feeling of presence within a virtual world is further highlighted in the following extract:

> Extract 18: "*I think that's the biggest thing going into like Fallout: New Vegas. Made a character, uses guns, except I got the stats wrong so I can't use guns that well. They wobble a lot and my accuracy is down, which means I have to myself physically aim really well and try really hard and I think that that does actually feel like it's me because I am having to pay so much attention to my movements and things*" (P10).

Extract 18 details how the participant experiences a sense of embodiment with their avatar due to the difficulty of the gameplay mechanics relating to aiming and firing a gun in a virtual world. More specifically, the participant indicates that their avatar feels like an extension of themselves because they need to concentrate in order to perform gameplay tasks, and the difficulty they experience increases their sense of presence and connection to their virtual world avatar. This participant further elaborates on this point in the following extract:

> Extract 19: "*It's definitely you do feel that kind of I am the character, the character is me, the character is very bad at shooting people*" (P10).

In Extract 19, the participant emphasises the merging of the physical world player with the virtual world avatar, leading to a strong sense of presence within the game world. Of note, the participant describes their poor in-game gunplay from the position of the character, detailing that the character is bad at this task. This complements the previous extract where the discussion of skill is described from the position of the player, and when both extracts are taken together, they show the amalgamation of these two entities within the virtual world. More

specifically, neither the character nor the player is seen as singularly at fault for the poor marksmanship and gun control, but rather the responsibility lies with both due to the integration of these two entities. Furthermore, in addition to affecting feelings of presence within a virtual world, advanced game difficulty can also lead to stronger emotional ties between the player and their avatar, as shown by the following extract:

> Extract 20: "*In a game like Skyrim it can be a bit of a pain in the arse if you're on 'regular'. If you're on 'survival' it can be absolutely heart breaking because it's just gone and that's it*" (P12).

In Extract 20, the participant details their experiences of losing game progress through the death of their character in different game modes (i.e., 'regular' and 'survival') in the videogame *The Elder Scrolls V: Skyrim* (i.e., a fantasy role-playing game). The participant discusses how dying in the videogame is considered an annoyance in a 'regular' mode, but during 'survival' mode (i.e., an option to add various realistic gameplay mechanics such as requiring regular food, warmth and, in this case, permanent death) losing progress becomes much more emotionally charged because of the higher stakes involved. More specifically, the participant describes the experience of losing a character in this mode as "*heart breaking*", which indicates that the level of emotional connection the participant has for their avatar is notable, and seemingly deriving from the fragility of their avatar brought about by the game difficulty. This suggests that playing a videogame that imposes higher stakes through advanced difficulty options, such as permanent death, facilitates the development of stronger and more meaningful emotional ties between the player and their virtual world avatar.

Discussion

The present study was designed to explore the components of the user-avatar relationship in videogames, with a particular focus on the Proteus Effect (PE). Through the use of thematic analysis, a total of five major themes were identified from the interview data that were pertinent to either the features of the user-avatar relationship or factors that influenced this bond that occurs between gamers and their characters. These five themes comprised: (i) 'heterogeneity of game worlds'; (ii) 'avatar attachment'; (iii) 'game experiences affecting physical world behaviour and attitudes'; (iv) 'types of self in a virtual world' (with the sub-themes of 'actual self', 'idealised self', and 'utopian self'); and (v) 'game difficulty affecting user-avatar relationship'.

Types of self in a virtual world and avatar attachment

In terms of the user-avatar relationship, one of the key distinguishing features of using a virtual world avatar was the ability of gamers to insert a version of themselves into the game world. However, instead of serving a single purpose, the gamers involved in the present study used their avatars in a myriad of ways depending on how they chose to customise their characters. For example, some participants chose to base their game characters on a realistic version of their physical world self. The participants that customised their avatar in this manner indicated that this was to facilitate a sense of presence within the virtual world, and that seeing themselves through their avatar helped to increase their enjoyment of the game.

Other participants instead chose to base the appearance of their game avatars on an idealised version of their physical world self, selecting attributes and characteristics that represented how they wished they could appear as in the physical world. The participants who created idealised avatars discussed how designing a character in this manner provided a means to attain physical characteristics that they wished they could have and close the distance between their actual appearance and desired appearance, albeit in a virtual world context. This form of avatar customisation suggests that a videogame world can provide individuals with an opportunity to inhabit a body that represents how they would ideally like to appear, but are unable to in the physical world, thereby demonstrating a sense of freedom and control over one's self that is not present, or at least as easily obtainable, in the physical world.

Finally, some participants involved in the present study expanded on idealised avatars and created avatars that contained features that are impossible to obtain in the physical world, a process referred to as utopian avatar creation. More specifically, these utopian avatars contained elements of fantasy, such as elf ears or human-animal hybrids. Interestingly, the participants indicated that despite containing elements of impossible fantasy, these utopian avatars nevertheless represented how they wanted to appear. As discussed in previous research (Szolin et al., 2022a), this desire of participants to have characteristics and physical attributes of impossible fantasy races may be indicative of an overlap between utopian and idealised avatars that occurs exclusively within virtual worlds. More specifically, it may be posited that utopian and idealised self-avatars are in fact functionally the same thing in so far as they both represent how an individual ideally wishes to appear, with the only distinction being that the features of a utopian avatar only naturally exist within the game world.

However, it should also be stated that various forms of cosmetic surgery exist that allow physical world humans to alter their appearance to align closer with creatures traditionally found in fantasy, such as the previously discussed elf ears found in Extract 15. However, while this ability to cosmetically mimic specific characteristics of fantasy races is true in some cases, such as humanoid elves, the extent to which this is possible varies based on how divergent the fantasy race is to physical world humans, although arguably this gap is closing as medical and cosmetic sciences advance. This means that the separation between utopian and idealised avatars is increasingly feeble, and that not only can an individual use the virtual world of videogames to inhabit a body with elements of fantasy, but this is also becoming a possibility within the physical world. Furthermore, this highlights how the avatar can be used as a form of testing ground for changes to an individual's appearance in the physical world, and that a gamer can use their experiences of controlling a videogame character as a means to try out a new look before implementing this in the physical world through cosmetic surgery to mimic a fantasy race.

In addition to providing an opportunity to insert a version of one's self into the virtual world, the findings also indicated that avatar customisation is a key element in avatar attachment. More specifically, the participants involved in the present study indicated that having the opportunity to design and customise their own avatar provided a sense of enjoyment, but also gave participants a feeling of emotional connection and ownership over their characters. Through this, participants viewed their avatars as more than simply tools used to navigate a game world, and became strongly attached to the characters that they created.

Heterogeneity of game worlds and gameplay difficulty

Next, in terms of elements that affected the user-avatar relationship were the two themes of heterogeneity of game worlds and game difficulty affecting user-avatar relationship. Firstly, the participants involved in the study frequently discussed how specific elements of videogames can affect their sense of immersion, enjoyment, and connection to their characters. For example, some participants noted how having consequences to their avatar's action increased their sense of presence and immersion within the game. In addition, several participants also discussed the importance of controller input as a factor that affected their enjoyment and involvement in a game, with several participants indicating that fluid and

natural-feeling controls increased their sense of connection to their avatar, whereas disjointed controls negatively impacted their immersion within the virtual world.

Related to these points concerning game mechanics affecting immersion and the user-avatar relationship were the consistent comparisons made by the participants regarding the differences between various videogame worlds. More specifically, most of the participants in the present study frequently discussed how videogame worlds were not homogenous and their experiences could differ substantially between different game titles. Moreover, several participants stated how even games created by the same game developer and, from a cursory glance, appear functionally very similar or even from within the same franchise may in fact offer entirely different experiences that affected an individual's relationship with their avatar.

While the association between videogame immersion and elements of gameplay such as controller input, graphical fidelity, and other factors have been highlighted by previous research (Gorisse et al., 2019), the question of how videogame worlds differ in terms of the effects on the user-avatar relationship is less well understood. Based on the interview data collected in the present study, it appears that participants' experiences in regard to their immersion, sense of presence and connection to their avatar varied greatly between different videogame genres or worlds, even those that are seemingly very similar. However, research into the user-avatar relationship in the context of videogames rarely acknowledges this lack of heterogeneity in regard to research findings (Szolin et al., 2022b), when in fact this may be a crucial consideration in regard to both research design and applicability of research findings in this field of study.

In addition, and related to the point on heterogeneity of videogame worlds, was the theme of how videogame difficulty could also affect the participant's user-avatar relationship. Similar to the research by Petralito et al. (2017), the participants in the present study discussed how high stakes (such as a character's permanent death) and advanced game difficulty facilitated greater in-game sense of presence and connection to their avatars. More specifically, participants described how greater game difficulty and mechanics meant that they concentrated more on their character and controls, and this in turn helped to create a stronger sense of presence within the game world through their avatar. This links well with the previously discussed theme of heterogeneity of videogame worlds, and how differences found within particular videogames (i.e., gameplay difficulty, permanent death) can lead to different player experiences and consequently affect the strength of the user-avatar relationship.

Game experiences affecting physical world behaviour and attitudes

The final theme identified through the interview data relates to game experiences affecting physical world behaviour and attitudes. Many of the participants discussed how exposure to their avatar through gameplay often influenced them to mimic specific characteristics of the avatar in the physical world. For example, several participants described how they would attempt to imitate visual characteristics of their avatar outside of the game, including elements such as hairstyle and clothing choice. More specifically, the participants detailed how seeing their avatar with clothing apparel or physical stylistic choices that the participant considered desirable encouraged them to seek out similar clothing items in the physical world or choose to style their hair in a similar manner to their game character.

Imitating an avatar's clothing or physical characteristics in this manner may be interpreted in one of two ways. Firstly, the participants may have purposely chosen these stylistic choices for their avatar as a method of trying it out in a virtual world before attempting to copy this in the physical world, in which case the avatar may have been used as a form of virtual self-mannequin. Using an avatar and virtual worlds as a form of testing ground for personal choices relating to appearance has been previously identified in other research, including gender-dysphoric gamers using game worlds to safely try out new gender identities (Arcelus et al., 2017; Griffiths et al., 2016). This is highlighted in Extract 14, where the participant discusses how character customisation allows members of the transgender community to create a representation of how they would like to present as in terms of their appearance, which may then act as a precursor to attempting to recreate this look in the physical world. In this sense, the avatar may be used as a form of testing ground for appearance in terms of either relatively minor stylistic choices to much more significant changes to an individual's gender identity or even adoption of characteristics associated with fantasy races such as elves. Furthermore, the ability for an individual to use their avatar as a form of virtual mannequin highlights how videogames can be seen as a free and open space for individuals to explore aspects of themselves, whether that be in terms of gender identity or merely stylistic choices of hairstyle.

Alternatively, it may be the case that these participants designed and customised their avatars without any premeditated intention to later mimic their avatars in the physical world, but were instead later influenced by their avatars after extended gameplay. This potentially signals an interesting aspect of the user-avatar relationship, namely the bi-directional nature of the bond

that develops between an individual and their videogame character. More specifically, this suggests that while gamers can influence their avatar in terms of appearance through character design and customisation, it may also be the case that an avatar can in turn influence the appearance and stylistic choices of the player outside of the game.

Furthermore, it was identified through analysis of the interview data that several participants were not only influenced by their avatar into changing their physical world appearance, but were also drawn towards new behaviours as well. For example, one participant detailed how after playing as an avatar that engaged in botany and astrology as they had done so within a videogame, they became interested in these topics and pursued further knowledge of these subjects in the physical world. This further highlights the bi-directional user-avatar relationship structure, and suggests that playing as a videogame avatar can lead to notable changes to an individual's physical world appearance and behaviour. Pursuant to this aspect of the user-avatar relationship, there are a number of key and potentially highly valuable ways that this relationship dynamic can be applied to a range of topics and issues. For example, the potentially high susceptibility of individuals towards avatar influence may be used as a means of encouraging individuals into developing an interest in and pursuing specific academic subjects, such as the previously discussed example of botany. Furthermore, the application of this bi-directional relationship dynamic may also be useful to areas such as marketing within videogames, namely through parallel consumer goods that are available in both the virtual world and the physical world.

As a final note on the theme of game experiences affecting physical world behaviour and attitudes, it was found that a small number of participants carried experiences from the perspective of their avatar into the physical world. For example, in Extract 9, the participant described how engaging in specific in-game behaviours for an extended period of time (e.g., foraging for items) led to an altered sense of perception and reaction to physical world stimuli that mirrored the behaviour of their avatar in a process that appeared to align with GTP. While the occurrence of GTP is not specific to avatar use, and can occur in videogames which do not contain virtual characters such as *Tetris* (a puzzle-block game), in this context it may reveal an interesting facet of the user-avatar relationship. More specifically, individuals who engage in a virtual world activity as their avatar may begin to see their physical world reality altered by that experience, which highlights the permeable and bi-directional relationship that occurs between a user and their avatar and how a virtual world character can influence the videogame player in the physical world through altered perceptions and reactions to stimuli.

The Proteus effect

In addition, and in regard to the original aims of the present study, it should be acknowledged that the analysis did not identify any themes explicitly relating to the occurrence of the PE. More specifically, although the study was designed to explore the user-avatar relationship in a wide and general sense, a key consideration while designing the interview schedule was to investigate how the avatar can affect the user both during and after gameplay. Although several themes were identified from the data that were related to this bi-directional relationship dynamic, the specific occurrence of the PE was not detailed by any of the participants. However, rather than potentially being seen as a limitation, another interpretation of this absence of explicit PE occurrences may in fact highlight an interesting, albeit tenuous, aspect of the PE in the context of gamers, namely the hidden and subliminal nature of the activation of this phenomenon.

More specifically, the extant research relating to the PE in the context of videogames suggests this phenomenon occurs quite frequently, with the vast majority of studies identified some form of PE consequence (Szolin et al., 2022b). However, while the majority of the research on this topic identifies the PE occurring in various settings and with a range of individuals, none of these studies explicitly explore the extent to which the participants are aware of being influenced by their avatar in this manner. In light of this, it may be the case that the PE occurs without an individual's knowledge, and may in fact be reliant on the gamer being unaware that they are being influenced by their videogame character. While this interpretation is a tenuous conclusion to be drawn based merely on the absence of data, it does nevertheless potentially highlight an integral and as of yet unexplored aspect of the PE.

Relationship between groups and themes

As a final note, it is perhaps worth discussing a number of common trends identified in the present study regarding specific participant groups and themes. However, it must first be acknowledged that any points raised here are at best anecdotal, and should not be considered as reliable evidence for any links or relationships between participant groups and behaviours or attitudes regarding videogame use. Nevertheless, despite the tenuous nature of these points, several potentially interesting links can be made that may illuminate specific aspects of gaming and the user-avatar relationship. Firstly, avatar attachment appeared to be the most universally discussed theme among this sample of participants, and was raised by 11 out of 12 participants.

This may indicate that avatar attachment and the importance of character customisation in developing a user-avatar relationship affects videogame players irrespective of membership of any specific videogame population, such as transgender gamers or individuals with GD. Furthermore, the prolificacy of the theme of avatar attachment may also be seen as highlighting that the development of a relationship between a user and their avatar, and facilitated through customisation and the sense of ownership that seemingly imparts, is a key and fundamental aspect of videogame playing for many individuals.

Secondly, it is also worth noting that there was some overlap between participants providing quotes for each of the sub-themes of relating to types of self in a virtual world, specifically the actual-self, idealised-self, and utopian-self forms of avatar customisation. More specifically, several participants have discussed more than one form of avatar creation, and that this was in fact more common than a participant discussing just one category. To explain this tendency for participants to contribute to multiple categories in this manner, it may be that these forms of self-representation should be seen as fluid rather than fixed and separate. More specifically, it may be the case that the actual-self, ideal-self, and utopian-self in the context of videogames are on a spectrum rather than uniquely distinct, and that aspects of one form of avatar creation can permeate through to other categories.

For example, while a participant may choose to design their avatar to mostly align with a representation of their actual-self, they may also add several minor idealised-self-improvements (e.g., an alternative desired hairstyle). In this example of minor idealised-self additions to an actual-self template, it would perhaps be incorrect to now identify the avatar as being solely based on the idealised-self, and a more fluid approach to seeing the avatar as being an actual-self-avatar with elements of an idealised-self may be more appropriate. Furthermore, this fluid method of viewing categories of self-representation in videogame avatars aligns well with the previously discussed point regarding the lack of unique distinction between utopian and idealised-self-avatars, and that considering avatar creation as permeable (and on a spectrum) rather than in a purely fixed and distinct manner may be more appropriate to view this phenomenon.

Finally, a further trend identified regarding participants and their contributions to themes relates to the apparent homogeneity of gamers. In particular, despite the participants belonging to several potentially distinct groups relating to gender identity, employment status, nationality, and GD status, there does not appear to be any notable pattern or distinctiveness in their

contributions to themes. This lack of discernible pattern or trend in theme contribution may indicate that lifestyle choices, experiences, and innate differences among participants may be largely irrelevant in terms of the user-avatar relationship and its components. More specifically, these apparent similarities in user-avatar experiences may point to the label or identity of videogame player as being of more relevance in terms of the user-avatar experience than individual group differences, and that individuals may develop largely similar bonds to their virtual character irrespective of membership to certain specific branches of the videogame community.

However, to temper this assertion, it should be noted that these facets of the user-avatar relationship (i.e., avatar attachment) were not assessed in terms of intensity and strength and that this anecdotal evidence consists of only a very small sample of individuals. Therefore, it may be that differences in these facets of the user-avatar relationship may appear in a quantitative study with a larger sample that specifically measures not just occurrence but also the strength of these phenomena. For example, while the majority of participants across individual groups discussed that game difficulty affected their user-avatar relationship, this may be more pronounced among specific groups when examined in more detail.

Limitations and future research

The present study identified a number of themes that highlight the components of the user-avatar relationship in videogames. However, a number of limitations must be acknowledged in regard to the study. Firstly, a key issue relating to the methodology used is the inherent subjectivity of the role of the interviewer and interpretation of the data, and the potential for different researchers to draw alternative conclusions from the same dataset. While this subjectivity is a largely unavoidable aspect of qualitative research, it does nevertheless mean that these results are not necessarily generalisable, and should be considered as a single interpretation of the experiences from one set of gamers. However, while the subjectivity of the researcher may be considered as a limitation in terms of generalisability, this was also an important element of the coding and analysis of the study. More specifically, the experiences, positionality, and subjective interpretation of the data by the researchers was a vital part of the process that guided the coding and formation of themes alongside their unique interpretation during the analysis.

Furthermore, while a range of participants were chosen in terms of gender identity, it should also be acknowledged that this comprised a fairly small age range of emerging adults (i.e., 18

to 27 years old) and only two nationalities (British and American). In light of this, it may be useful for future research to investigate the experiences of gamers from alternative age groups as well as other nationalities.

In addition, and related to the previous point, detailed observation of the specific characteristics of the sample of participants involved in the present study may appear to be largely heterogeneous, with notable differences concerning factors such as GD status, gender identity and employment status. However, and as previously discussed, through observing trends in the data in terms of themes and contributing participants, there appeared to be little in the way of clustering of participant groupings (e.g., GD status, gender identity) and specific themes. This lack of noticeable separation in experiences of participants indicates that while these individuals can be distinguished from one another across a range of factors that initially appears to present the total sample as heterogeneous, the fact that they each identity as videogame players appears to take precedent over these differences and provides uniformity to their experiences

Moreover, a further limitation that may be identified in the present study relates to the absence of any pre-study assessment of videogame use in terms of frequency or content preference. This lack of pre-study measure ensuring homogeneity of the sample in regards to specific videogame use meant that while a range of videogames experiences were included in this study, some of the data in regard to the user-avatar relationship were not of relevance to this specific topic. For example, some of the participants indicated that the games they preferred to play featured only limited use of avatars in terms of customisation and game play mechanics (e.g., the first-person shooter *Call of Duty*) compared to games played by other participants (e.g., the action role-playing game *Fallout: New Vegas*). This meant that while the participants who favoured genres such as first-person shooters were able to discuss videogame use in general, their experiences specifically relating to avatar use, and by extension the PE, were more constrained than other participants whose typical game preference leaned towards role-playing games that inherently contain greater user control over an avatar's appearance and behaviour.

Finally, it should be noted that the participants with GD were not currently engaged in any videogame activity as a requirement of their treatment programme, and instead reflected on their experiences prior to seeking treatment for GD. This meant that, unlike the other nine participants included in this study, the participants with GD were relying on their memories of experiences of videogame use based several years prior to the interview, which may have led

to some distortion in terms of their descriptions and recollections of their videogame experiences.

Nevertheless, despite these limitations, the results of the present study highlight a number of avenues for future research, in particular concerning the PE in the context of videogames. Firstly, one of the major themes discussed in the present paper relates to the heterogeneity of videogames in regards to the development of a user-avatar relationship. More specifically, participants consistently described how experiences relating to their user-avatar relationship could alter significantly between different videogames, even those from the same franchise and development team. However, research conducted on the PE frequently uses only a small range of videogames genres and titles, with *World of Warcraft* (a fantasy MMORPG released in 2004) and sports simulation titles (e.g., *Wii Sports Resort*) on the currently largely obsolete *Nintendo Wii* videogame console (released in 2006, and known for its use of motion control technology) being amongst the most used in this research (e.g., Ratan et al., 2020; Praetorius & Görlich, 2020; Szolin et al., 2022b). Based on the experiences of the participants involved in the present study, future research may benefit from investigating the PE in a wider range of videogame contexts as well as directly comparing the results from different videogame worlds.

In addition, and related to the point of diversity of videogames in PE research, another theme identified in the present study concerned how difficulty in a videogame can also affect the user-avatar relationship. More specifically, participants discussed how videogame difficulty and inclusion of gameplay mechanics that increased a game's challenge created a greater sense of immersion and self-presence within the virtual world as well as strengthening the bond between a user and their character. Factors such sense of presence, avatar attachment and emotional connection have been identified as key elements for the occurrence of the PE (Ratan & Dawson, 2016; Stavropoulos et al., 2020). Therefore, based on the described experiences of these participants that videogames with advanced difficulty options appear to facilitate elements conducive to the occurrence of the PE, future research may benefit from not only employing a wider range of videogame titles and genres but also specifically to focus on videogames that are considered more challenging in terms of gameplay.

Finally, a further avenue and consideration of future research on the PE relates to the previously discussed point concerning the potentially subliminal nature of this phenomenon. Previous research has indicated that the PE is not a rare occurrence, and has been recorded across a relatively large number of studies and with a range of different participant groups (Szolin et

al., 2022b). However, despite the present study specifically investigating this phenomenon, no data explicitly pertaining to the PE were identified from the interview transcripts. This lack of data regarding the PE may tenuously be interpreted as indicating that the occurrence of this phenomenon is not necessarily consciously known by the individuals experiencing this process. Therefore, future research may benefit from both investigating whether the occurrence of the PE is subliminal and hidden to those experiencing this process and whether this is a necessary factor for the PE to affect individuals. Future research exploring the potentially subliminal nature of the PE will not only provide useful information that will expand the research area, but may prove invaluable in how wider PE research is conducted. In particular, the potentially subliminal nature of the PE may have significant implications in regard to any studies that employ self-report measures that assess the occurrence of this phenomenon as participants may not be aware that this process has occurred despite experiencing changes to their behaviour or attitudes in line with this process.

Conclusion

The analysis presented in the present study highlights a number of aspects of the user-avatar relationship in videogames and potential factors that affect the strength of this relationship. Participants consistently used their virtual character to insert some form of their self into the videogames, whether that be their actual self, idealised self, or utopian self. This use of the avatar as a vehicle to personally inhabit the game world was seemingly done to increase their sense of presence in the game and to allow the gamer an opportunity to realise a version of their self that more closely aligns with how they would ideally like to appear, and in some cases this includes elements of fantasy.

In addition, participants spoke of the differences found between videogame titles and genres, how advanced difficulty and challenge could impact their relationship to their avatar, and the role character customisation had in regard to avatar customisation. Furthermore, participants also discussed how their avatar could be used as a source of influence towards their physical world behaviour, ranging from mimicking their character's hairstyle and appearance to taking an interest physical world topics and hobbies that align with their character's in-game behaviour.

Finally, and based on these identified themes, the present study highlighted a number of potential avenues for future research specifically in the context of the PE, including employing

a wider range of videogame titles and genres as well as conducting research with videogames that are based on titles considered to present a greater challenge in terms of difficulty.

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