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From Virtual Identity to Real-Life Intentions: Avatar Identification and Health Intentions through Immersion and Enjoyment
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Abstract

Digital games are a more powerful medium that may condition the psychological experience of the players and behavioral intentions. This paper focuses on how identification with player avatars affects behavioral intentions (exercise intention and healthy food intention) regarding health-related behaviors using immersion and enjoyment as the mediating variables. Based on the avatar identification and player engagement theories, the paper hypothesizes that greater identification with the game avatars will positively affect the immersive experiences and enjoyment by the players, which subsequently can lead to intentions of users to change to healthier lifestyle behaviors. The survey questionnaire was a structured survey questionnaire that the researcher used to gather data on 326 active gamers. The measurement model proved to have good reliability and internal consistency of all the constructs used. Correlation and regression analyses were performed, and a mediation analysis was done with the PROCESS macro by Hayes (Model 4), which bootstraps. The findings suggest that player avatar identification is a significant predictor of immersion and enjoyment, whereas immersion and enjoyment have a positive impact on exercise intention and healthy food intention. Moreover, the mediation analysis proves that the relationship between player avatar identification and health-related behavioral intentions has significant mediating variables of immersion and enjoyment. These results indicate that psychological interactions with avatars and favorable gaming experiences may not only be confined to the virtual realm, but the experiences can be used to change intentions in players to adopt more health behaviors in the real world.

Keywords: Avatar Identification, Immersion, Enjoyment, Exercise Intention, Healthy Food Intention, Gaming Psychology.

Introduction

Digital gaming has become one of the most immersive and identity-salient media of the contemporary world (Anderson et al., 2025). In contrast to passive consumption of the media, video games allow players to manage and physically be avatars in active virtual worlds (Hao et al., 2025). It is this sense of interactivity that makes gaming stand out from the experience of traditional media by creating a heightened psychological sense of identification, agency, and presence (Vorderer et al., 2004). Unlike those who view movies or TV programs, where viewers are at a distance, looking at the characters in the story, video game players are the characters themselves, and their decisions and actions have a direct impact on the game world, as their

avatars. This participatory form changes users from spectators into agents, thus increasing the level of self-referential processing in the process of interacting with media. In the middle of this change is the idea of being an avatar (Wang et al., 2024). Avatars operate as virtual self-images where the players feel, make decisions, and behave in virtual worlds. Studies have shown that this process leads to player-avatar identification, which is a psychological condition where people assume the position of their avatars and temporarily apply avatar qualities to their self-concept (Klimmt et al., 2009).

The identification is not merely liking or attachment, but cognitive and emotional alignment which changes self-perception in the process of playing the game (Cohen, 2001). Empirical confirmation also clearly shows that avatar identification involves perceived similarity, embodied presence, and emotional congruence, which is once again confirmed by the significance of identity processes in interactive media situations (Ratan & Dawson, 2016). The active embodiment is also the capacity which makes gaming environments to be the place of identity exploration and self-expression. The digital worlds allow the players to create idealized, aspirational, or experimental versions of their personae, thus, they become used to the processes of identity rehearsal and self-expansion (Bessiere et al., 2007). Notably, these identity relations might not be restricted on virtual environments. The Proteus Effect is the theory of personality that suggests that the behaviors of offline persons are adjusted to the qualities of their virtual characters in such a way that online personalities may influence offline mindsets and actions (Yee and Bailenson, 2007). According to a recent meta-analysis, the avatar attributes do have dependable effects of behavioral conformity, which highlights the overall psychological relevance of virtual embodiment (Ratan et al., 2020).

The core of this media involvement change is through the notion of the avatar's embodiment. In interactive online spaces, avatars act as more than visual proxies; they act as performed self-representations in which players see, make decisions and act in virtual worlds. The avatars are experienced as opposed to the traditional media characters, who are only observed (Zimmermann et al., 2023; Hassan et al., 2023). The interaction embodied by this allows players to carry their identity into the digital space and provides the conditions of psychological integration of the self and self-representation. According to Klimmt et al. (2009), player-avatar identification is an interim change in self-perception where the players adopt avatar-viewpoint and incorporate avatar qualities in working self-concept. Here, the players do not just rule the character; they are put in the position of the character, and there is no distinction between the player and the avatar.

Notably, identification is conceptually different not only with liking, parasocial attachment or mere preference of character. Unlike liking which indicates positive assessment, identification is perspective-taking and self-referential processing that redefine the momentary self-perception (Cohen, 2001). The mental resources are applied during the gameplay to the fulfillment of the objectives of the avatar, the situation perception through the avatar eyes, and the emotion reaction to the events happening in the game as though they were personal. This self-referential processing deepens the subjective fusion of the player and the avatar making avatar qualities more psychologically applicable. The avatar identification has a multidimensional nature which is supported by empirical research. Ratan and Dawson (2016) confirmed the Identification with Avatar Scale that identification has perceived similarity, embodied presence, and emotional alignment. Perceived similarity is a measure of how closely the players consider the avatar to be a depiction of their real or desired self. Embodied presence This is the feeling of being the avatar in the virtual world. The emotional alignment describes the extent to which players are associated with the feelings and the experiences of the avatar. These dimensions, together,

emphasize the fact that avatar identification is not an incidental part of the gaming process but a central identity process (Hassan et al., 2023). Avatar embodiment can help to elicit identity-relevant schemas with possible consequences that are not limited to the gaming environment by engaging in perspective-taking and self-integration.

Albeit previous literature illustrates that avatar embodiment may affect users in terms of attitudes and behavior based on identity-related processes like the Proteus Effect (Ratan et al., 2020, Yee & Bailenson, 2007), existing studies have tended to focus on interpersonal and social aspects rather than on self-regulatory areas like health-related behavioral intentions. In addition, although player-avatar identification has been theorized to be associated with altered self-perception (Klimmt et al., 2009) and empirically proven to be a multidimensional construct (Ratan and Dawson, 2016; Ahmad et al., 2023), few studies have investigated the psychological processes according to which identification is converted to offline motivational orientations. Immersion as an example of experiential constructs (Jennett et al., 2008) and enjoyment as an example of self-determination processes (Ryan et al., 2006) have been adequately established in the literature of gaming but have seldom been combined to form a coherent explanatory framework that links avatar identification to health intentions in the real world. Therefore, there is still a critical theoretical gap on whether and how immersive and enjoyable gameplay experiences can be used to identify and bridge the gap between intentions to exercise and healthy food consumption via player-avatar identification. The gap discussed is critical in achieving further insights into digital self-representation as the avenue that might facilitate the encouragement of adaptive health-related motivations.

The process in which players identify themselves with the avatar is known as player-avatar identification (PAI) and is a psychological process by which players identify with their avatars and temporarily include avatar traits within their own self-concept. Avatars in an interactive online space. Avatars in interactive digital space have been used as embodied images by which players see, perform, and socialize in virtual worlds. Klimmt et al. (2009) theorized the avatar identification as the process of a temporary change in self-perceptions, where the player identifies with the avatar and experiences the game events through the eyes of the character. More recent studies have confirmed this idea further and proved that avatar identification entails more than just one psychological dimension, as perceived similarity, embodied presence, and emotional dissimilarity between the player and the avatar (Ratan & Dawson, 2016). The actions of avatar identification have often been explained by the Proteus Effect, according to which individuals would adapt to behavioral standards in relation to their digital self-representations (Yee & Bailenson, 2007; Ali et al., 2024). When applied in the game setting, enhanced identification with avatars can trigger identity-related schemas and mediate the offline attitude and behavioral intentions of users. In a meta-analysis, Ratan et al. (2020) further authenticated that the characteristics of avatars result in quantifiable effects of conformity in behavior, which shows that digital self-representations can influence the psychological and behavioral consequences of users outside of the virtual world. When it comes to health-related behavior, the studies indicate that exercise-related attitudes and motivations could be affected by avatar-based experiences. Fox and Bailenson (2009) established that exposure to idealized virtual images of self-exercising enhanced the exercise outcomes of the participants who underwent the exercise condition as opposed to control conditions. In the same way, Peña et al. (2016) discovered that avatar body shape had effects on the physical activity attitude and behavior of the users in virtual worlds. These results indicate the presence of health identity cues triggered by avatars, which affect motivational orientations of users toward exercise.

Theoretically, the association between avatar identification and exercise intention can also be explained with identity-based motivation theory that states that, people tend to do things that correspond to salient features of their identity (Oyserman, 2009). Identity-consistent behavioral motivations could also be triggered when players highly associate themselves with avatars who are a representation of competence, strength, or physical abilities. This could make players have increased intentions to act in line with the identity of their avatar by exercising. The recent studies also indicate that the identification of the avatars might affect the behavioral intentions by facilitating the process of internalizing behavioral intentions that are not limited to the gaming world. The authors revealed that the greater the avatar identification, the greater the psychological integration between the player and the avatar (Ratan & Dawson, 2016). With this type of integration, the avatar-related behaviors are cognitively available and motivationally applicable to the player that might influence the actual behavioral intentions in real-life, including participating in physical activity.

Developing on this point of view, association with online personalities could affect behavioral intentions outside the online world. According to the newer studies, association with the digital avatars can shape the behavioral intentions outside the virtual setting. Based on the Proteus Effect, people are more likely to abide by the behavioral norms that are linked with their online self-images (Yee and Bailenson, 2007). When users feel too connected to their avatars, the qualities these avatars possess may affect the attitude and behavioral pattern of the users. Based on the existing empirical data, the properties of an avatar can influence real-life behavior, such as health-related attitudes and lifestyle (Ratan et al., 2020). Players can possibly internalize the qualities of their avatars through identification and self-perception processes and make behaviors matching those qualities more cognitively available. The study of health behaviors also asserts the role played by identity processes in determination of dietary intentions. According to the identity-based motivation theory, people tend to engage in actions that reflect salient factors in their self-concept (Oyserman, 2009). When gamers associate themselves with avatars of aspirational versions of vitality, competence or physical health, such identity signals can trigger health-promoting behavioral motivation. At least in digital reality, where avatars frequently represent idealized versions of the self, this kind of identification can lead players to have intentions of a kind that support personal well-being, such as healthier eating habits.

This view can be further supplemented by empirical studies on the subject of avatar-based health interventions. Research has indicated that health-oriented or physically fit avatars may have an effect on the attitudes of users towards healthy lifestyles, as well as encourage diet and exercise plans (Peña et al., 2016). These results indicate that virtual self-representations are able to influence health-related cognitions by means of identification. As a result, greater identification with avatars can positively relate to people's plans of consuming healthy foods as a way of sustaining a lifestyle that is similar to that of the identity of the avatar. Identification of players-avatars can also affect the degree to which players are immersed in the game. Immersion is a mental condition where people are engrossed in a virtual world and have a lower sense of the real world (Jennett et al., 2008). Psychological engagement in interactive digital space can be enhanced through the identification with avatars when the players are able to consider the events through the eyes of the virtual character.

Studies have indicated that greater association with avatars improves the involvement and presence of the users in the virtual worlds. According to Klimmt et al. (2009), the moment that the players take the role of their avatar, they experience a momentary change of self-perception that further increases their psychological engagement in the game. This process of perspective-taking makes players more emotionally and cognitively engaged with the virtual environment

and thus reinforces immersive experiences. Empirical research also shows that belonging to avatars also adds to the feeling of embodied presence and psychological immersion in the digital space (Ratan & Dawson, 2016). However, more recent studies also reveal that the process of avatars is also closely related to immersive interaction with games and virtual worlds. Using the example, Bowman et al. (2022) point out that identifying with game characters and avatars results in an attentional focus and emotional involvement of the user, which is a key element of immersion in an interactive media experience. Likewise, Ratan et al. (2020) give meta-analytic support that avatar-related attributes and identification processes may influence cognitive and behavioral reactions of users in virtual space. These results indicate that the process of identification can make the psychological involvement required to play the game immersively more intense. Extending the contribution of avatar identification to the formation of psychological involvement of the players in the virtual world, the previous studies imply that the process of avatar identification can also determine the level of enjoyment a player can feel during the gameplay. Enjoyment is one of the fundamental results of media entertainment, and they are the instant gratification that comes as a result of engagement with the media content (Vorderer et al., 2004). In the world of games, fun is created in the experience of a player having a significant interaction with the game world and being emotionally engaged with the characters in the game.

Avatars can also be used to make the gameplay more enjoyable since the players have the opportunity to explore the game world as though it were their own. When the players feel that their avatar is part of them, they get more emotionally engaged in the story and actions in the game. Klimmt et al. (2009) believe that role-playing, which identifies with the game character, creates a momentary change of self-perception, and the game players perceive the character's victories, struggles, and feelings as their own. Such an emotion-enhancing approach to perspective-taking makes the gaming experience more enjoyable. The connection between the identification of avatars and fun in gaming conditions is also supported by the empirical studies. As an example, a study conducted by Ratan and Dawson (2016) proves that the greater the identification with avatars, the higher the level of emotional engagement and involvement in the process of playing the game. Likewise, Bowman et al. (2022) indicate that the player-avatar connections are significant to the process of forming the interest of players and influencing their participation and emotional reaction to video games. The more the players are psychologically attached to their avatars, the higher the chances of experiencing enjoyment since the in-game activities can be personally significant.

In motivation terms, the pleasure in games is strictly related to intrinsic motivation processes. Ryan et al. (2006) elaborate that positive gameplay experiences are achieved once the players have a sense of autonomy, competence, and psychological engagement in the game environment. These experiences can be reinforced with identification with avatars, as it will enhance the feeling of agency and emotional investment into gameplay activities by players. Consequently, the greater increase in player-avatar identification could lead to a greater intrinsic enjoyment of gaming experiences. Immersive experience is a state of mind whereby people become highly engaged with a mediated environment and have a reduced consciousness of the real world when engaging with digital content (Jennett et al., 2008). The elements of immersion in gaming settings include cognitive participation, affective engagement and increased perception of being in the virtual reality. This kind of deep involvement may have a serious impact on the attitude, motivation and behavioral intentions of the players.

The studies indicate that the use of immersive experiences in the digital world can influence the health-related cognitions and motivation of users toward behavioral change. When people get

immersed in the interactive virtual world, they are likely to have simulated behavior and feelings that affect their views of actions in the real world. As an illustration, the immersive virtual environments have been reported to lead to increased motivation to perform the physical tasks by the users as they are able to experiment with the behaviors connected to exercise within the exciting and interpersonal environments (Fox and Bailenson, 2009). Using immersive interaction, the users can internalize the positive experiences of physical activity that can enhance their intention to engage in similar behaviors even in the real world. Immersive experience can also be used to explain how immersive experience could affect exercise intention using the experiential learning theory and the embodied cognition theory. Digital environments enable them to recreate the phenomena of real-world behaviors and undergo the relevant psychological consequences in an interactive and harmless environment of simulation (Slater & Sanchez-Vives, 2016). These virtual experiences have the potential to influence the attitude of the users towards physical exercise by rendering the advantages of exercise more conspicuous and personally relevant. The more people experience such situations, the more intentions they may get to exercise in real life in their physical activity.

Scientific research also confirms the influence of immersive media experiences on the development of health-related intentions. The studies of VR-based exercise programs indicate that the feeling of immersion may enhance the motivation and interest of people to engage in physical practice (Farič et al., 2019). The more users interact with the interactive environments and experience high degrees of immersion, the more they are likely to think that exercise is more fun and attainable, which increases the motivations to exercise behaviors. Digital immersion is potentially capable of shaping the attitudes and behavioral intentions of end users by providing psychologically compelling contexts whereby users are highly immersed in virtual experiences. The immersion experienced by the users can make them feel either cognitively or emotionally engaged by the mediated environment and this can enhance the influence of the in-game experiences on the perceptions and motivations in real world (Jennett et al., 2008). This immersion can contribute to higher chances that the experience and messages found in the virtual world can shape the attitude of people towards health-related behaviors.

Evidence on immersive media indicates that highly involving digital space can influence the perception of health and lifestyle behavior patterns among users by making the simulated experience meaningful and relevant to them. As an example, immersive virtual environments have been adopted in health promotion interventions to promote healthier behaviors by enabling users to have a virtual experience of the impact and outcome of lifestyle choices and the experience in a rich and interactive manner (Slater & Sanchez-Vives, 2016). Under such circumstances, when persons are psychologically engrossed in such settings, the experiences can trigger cognitive and emotional reactions that can shape behavioral intentions regarding health and wellbeing. Furthermore, immersion can lead to an improved responsiveness of people to health-related prompts in the digital context. Research on immersive health communication has observed that interactive and engaging digital experiences have the potential to advance attitudes and intentions towards healthy lifestyle-related behavior, such as dietary behavior (Ahn et al., 2014). Whenever people get to be in the simulated environment, the information and experiences they go through can become more real and personally relevant, which enhances the chances of users developing intentions to change their healthier behaviors.

Fun is a major factor in determining the drive of individuals to indulge in activities especially in interactive media platforms. In gaming situations, fun represents the inherent value of enjoyment in the process of playing a game and is highly linked to the intrinsic motivation procedures (Ryan et al., 2006). Self determination theory states that people are likely to

participate in the activities that are perceived to be pleasant since those activities can provide them with the satisfaction of the basic psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000). The positive emotional states can be achieved when gaming experiences are enjoyable and motivate the users to seek the similar behavior out of the gaming context. Health psychology studies also show that enjoyment is a key predictor of exercise motivation and exercise behavior intention. People who have positive beliefs about the enjoyment of physical activity have higher chances of having positive attitudes towards exercise and display stronger intentions to participate in physical activity (Rhodes & Kates, 2015). Favorable experiences may increase levels of desire to engage in exercise by making the process seem to be enlightening instead of exhausting.

Within the framework of digital games, playing fun can promote the association of physical activity with positive emotions in users. The research on exergames and interactive fitness games has revealed that fun in the game may enhance people to be more motivated to participate in exercise and to have a better intention to do exercise (Peng et al., 2011). In such a situation, when the users are enjoying interactive gaming experiences where they can or can pretend to be engaged in physical activity, they can become more motivated to act in the same way. Moreover, positive emotional experiences have potential to enlarge the cognitive and motivational orientations of individuals to encourage them to do wellness promoting behaviors (Fredrickson, 2001). Fun in play could thus help to enhance the likelihood of being open to health-related practices such as participation in physical activities.

Entertainment is also capable of affecting the intentions of people to live healthy diets. It is known that positive emotional experiences can influence the health-related decision-making process as they make people more motivated to engage in the behavior related to personal well-being. The broaden-and-build theory of positive emotions suggests that positive affective states broaden the thinking of people and promote actions that help maintain health and well-being in the long-term (Fredrickson, 2001). When people have pleasure in a specific environment, they can be open to ways of maintaining a healthy lifestyle. Health behavior research indicates that positive affect and enjoyment have a positive correlation with intentions to have a healthy lifestyle, such as healthy diets. Indicatively, those who have positive emotions about health-related activities have increased chances to form positive attitudes on the need to sustain healthy lifestyles (Conner & Norman, 2017). Experiences that are pleasurable can thus enhance the drive of individuals to participate in activities that ensure that physical and mental health are improved.

In the virtual world, pleasant playing experiences can produce positive emotional conditions that are not limited to the gaming environment. Whenever users get pleasure and satisfaction during the gaming activities, such positive feelings can be transferred to their overall motivational orientations on health behaviors. The studies of serious games and health promotion have demonstrated that engaging digital experiences may help to promote users make healthier lifestyle choices, such as healthier meal consumption (Johnson et al., 2016). Such results imply that fun in the digital realms may help to form intentions to adopt a healthy diet. The current research is based on the Proteus Effect, a theoretical framework to define how the behavior and attitudes of people can be determined by the digital self-representations in online space. The Proteus Effect indicates that users are more likely to conform to the features of their avatars, and they will be altered to change their behavior, which transcends the virtual environment (Yee & Bailenson, 2007). When they adopt an avatar, people might adopt some qualities of the character that might be internalized and affect their self-perception and behavioral intentions. The Proteus Effect has since been applied to health settings via further studies. Research has

shown that the perception of avatars of healthy people or sporty individuals may determine the attitudes and the motivation of individuals to exercise and act in health-related practices (Fox & Bailenson, 2009). Through communication with avatars and the formation of favorable characteristics like strength, fitness, or competence, the players could internalize them and form behavioral intentions that align with a healthy lifestyle.

Avatars in gaming contexts are embodied digital beings in which the players perceive, communicate and experience the virtual world. Individuals can end up identifying with their virtual characters through repeated exposure to the avatars. Such identification can trigger behavioral expectations associated with the traits of the avatar, which can affect the behaviors and motivations of the users, according to the Proteus Effect. Yee and Bailenson (2007) established that the participants who represented themselves as taller avatars had more confident behavior in the negotiation tasks than did those who represented themselves as shorter avatars. These results indicate that, based on the avatars, it may be possible to change the way people act in the real world as they change their self-conception. The Proteus Effect in the setting of the current research offers a theoretical framework of understanding how player-avatar identification can be used to affect health-related behavior intentions, e.g.: exercise engagement and eating healthy. The attributes attached to an avatar can affect the psychological involvement of the player when the player perceives a strong relationship with the avatars. They can include this engagement in immersive experiences and fun, which can further influence the intentions of individuals to transcend the gaming setting and become more healthier in terms of their behavioral patterns.

Research Methodology

The research design used in the study was a quantitative research design to determine the relationships between player avatar identification, immersive experience, enjoyment, and health-related behavioral intentions, such as exercise intention and healthy food intention. A cross-sectional survey on people who are actively involved in playing digital video games and engage with avatars in the game was used to collect the data. The online questionnaire was given out via online methods and gaming communities. The study was voluntary, and the respondents were also assured that their answers would be anonymous and confidential. Quantitative survey technique is a widely used behavioral research tool, which examines relations between psychological constructs and behavioral plans (Creswell & Creswell, 2018).

All measures were obtained through the use of scales that have been previously used and tested across different literature and were modified to fit the game scenario of the current research. The identification of the player avatar was assessed on the basis of items which were modified after the Identification with Avatar Scale designed by Ratan and Dawson (2016). The scale of immersion was evaluated on the items based on the scale of immersion suggested by Jennett et al. (2008), which measures how much the players are engaged in the gaming world and forget their own environment. Measures of enjoyment were based on items that were generated as per the intrinsic motivation framework that was used with video games (Ryan et al., 2006). The measures of exercise intention and healthy food intention were prepared based on the items modified to health behavior research, which investigates intentions towards healthy behaviors and physical activity (Rhodes & Kates, 2015; Conner & Norman, 2017). The measurements have been provided on a five-point Likert scale with the lowest score of 1 (strongly disagree) and the highest score as 5 (strongly agree).

The data collected was analyzed by use of IBM SPSS Statistics. Descriptive statistics and reliability analysis were first done in order to evaluate the nature of the data and internal consistency of the measurement scales. In order to test the hypothesized relationships and mediation effects,

the study used regression-based mediation analysis with the PROCESS macro, which is downloadable on SPSS, created by Hayes (2018). To be more exact, the parallel mediation effects of immersive experience and enjoyment on the association between the player avatar identification and two outcome variables (exercise intention and healthy food intention) were tested with the help of PROCESS Model 4. Indirect effect estimation and indirect effect confidence interval estimation applied bootstrapping procedures with resamples of 5,000. Mediation analysis should be bootstrapped since it does not assume that the sampling distribution is normal, and it gives more precise estimates of the indirect effects (Hayes, 2018).

Data Analysis

The demographic characteristics of the respondents are in the form of Table 1. The sample comprised 326 participants. Considering the gender, the proportion of females was 52.45% (n = 171) and that of males was 46.01% (n = 150), whereas a small percentage (1.53%, n = 5) did not provide the gender information. It shows that the gender distribution in the sample is rather balanced. Most of the participants were undergraduate students (56.13, n = 183) in terms of educational background. This was then preceded by the graduates (37.73, n = 123) and postgraduate students (6.13, n = 20). The sample is composed mainly of undergraduate individuals, which illustrates the demographic profile of the active online gamers of the sampled population. Concerning gaming behavior, 45.40 percent of the respondents indicated that they played the games once a week (n = 148), and 15.64 percent and 12.88 percent of the respondents played the games twice and three times a week, respectively (n = 51 and 42). As well, 22.39% of the participants said they play games over three days per week (n = 73), which points to the fact that a significant portion of the sample played games frequently. Regarding the time spent playing games daily, most of the respondents (65.63, n = 212) said that they played 1-2 hours of games in a day. This was compared to 21.98% who played not less than 3-4 hours a day (n = 71), 4.95% who played not less than 5- 6 hours a day (n = 16), and 5.26% who played not less than 7 hours a day (n = 17). These findings indicate that the majority of the respondents played games of a moderate level, but a minor proportion of the sample participants were characterized by more frequent gaming. In general, the demographics picture shows that the respondents are the young, educationally inclined and averagely active gaming population, which aligns with the average consumer population of modern-day digital gaming.

Table 1: Demographics

Variable	Category	n	%
Gender	Male	150	46.01
	Female	171	52.45
	Prefer not to say	5	1.53
Education	Undergraduate	183	56.13
	Graduate	123	37.73
	Postgraduate	20	6.13
Gaming Days per Week	Once a week	148	45.40
	Twice a week	51	15.64
	Thrice a week	42	12.88
	More than three days	73	22.39
Gaming Hours per Day	1–2 hours	212	65.63
	3–4 hours	71	21.98
	5–6 hours	16	4.95
	More than 6 hours	17	5.26

Table 2 shows the reliability and descriptive statistics of the constructs of the study. Internal consistency in the measurement scales was measured with the help of Cronbach's alpha. The findings show that the constructs were all found to have acceptable to excellent reliability because the value of alpha of Cronbach was higher than the standard value of 0.70 recommended (Nunnally and Bernstein, 1994). In particular, player avatar identification had acceptable internal consistency ($\alpha = .74$), meaning that the items relating to the degree to which players identify with their avatars on a psychological level were fairly consistent. The level of reliability of the construct of immersion was high ($\alpha = .88$), implying that the question items could be used to measure the extent to which the participants experienced immersion in the gaming context. Likewise, the good reliability was exhibited by enjoyment ($\alpha = .82$) indicating a stable measure of pleasure and satisfaction when playing the game.

In the outcome variables, the internal consistency of the exercise intention was good ($\alpha = .81$), even though the two items were used to measure it. In the meantime, healthy food intention revealed superior reliability ($\alpha = .91$), which shows that the items used in denoting the intentions of participants to change their diet to healthier ones are highly consistent. As far as descriptive statistics are concerned, healthy food intention showed the largest mean score ($M = 4.49$, $SD = 1.35$), and it is possible to assume that the respondents showed a fairly high intention to consume healthy foods. This was then preceded by enjoyment ($M = 3.99$, $SD = 1.25$) and exercise intention ($M = 3.92$, $SD = 1.43$), which show moderate levels of enjoyment when playing the game and intentions to exercise. On the contrary, the mean scores of player avatar identification ($M = 3.66$, $SD = 1.17$) and immersion ($M = 3.43$, $SD = 1.38$) were relatively low, indicating that there were moderate levels of psychological engagement with avatars and gaming environment among the study participants.

Table 2: Descriptive Statistics & Cronbach Alpha

Construct	Items	Cronbach's α	Mean	SD
Player Avatar Identification	5	0.740	3.662	1.166
Immersion	5	0.875	3.433	1.383
Enjoyment	4	0.816	3.986	1.250
Exercise Intention	2	0.814	3.923	1.432
Healthy Food Intention	4	0.907	4.488	1.347

Table 3 shows the means, standard deviations, and the Pearson correlation coefficients of the study variables. The outcomes show that the constructs are positively and significantly correlated at $p < .01$ level. In particular, the identification with the player avatars is closely related to immersion ($r = .763$, $p < .01$) and enjoyment ($r = .712$, $p < .01$), meaning that the stronger the player identification, the higher the levels of immersion and enjoyment during the gameplay. There are also moderate positive correlations between player avatar identification and exercise intention ($r = .440$, $p < .01$), healthy food intention ($r = .355$, $p < .01$). Moreover, there is a high correlation between immersion and enjoyment ($r = .780$, $p < .01$) and positive correlation between immersion and exercise intention ($r = .344$, $p < .01$) and healthy food intention ($r = .276$, $p < .01$). On the same note, enjoyment is also associated with exercise intention ($r = .502$, $p < .01$) and healthy food intention ($r = .465$, $p < .01$) with moderation. Moreover, healthy food intention is positively related to exercise intention ($r = .495$, $p < .01$).

Table 3: Correlation Matrix

Variable	1	2	3	4
Player Avatar Identification				
Immersion	.763**			
Enjoyment	.712**	.780**		
Exercise Intention	.440**	.344**	.502**	
Healthy Food Intention	.355**	.276**	.465**	.495**

To test the first-level direct relationships between the study variables in the proposed model, simple regression analysis was used. The findings support that the player avatar identification also has a significant and positive predictive effect on the immersion ($b = 0.763, p = .001$) and is therefore able to predict that those individuals who strongly identify with their avatars are more likely to show a higher level of immersion when playing the game. On the same note, player avatar identification also bears a strong predictive of enjoyment ($b = .712, p < .001$), which means that greater psychological identification with avatars is related to a greater amount of enjoyment gained during the use of avatars to play games. Moreover, immersion is a strong predictor of exercise intention ($b = .344, p < .001$) and intention to eat healthier foods ($b = .276, p < .001$), which means that more immersed players tend to have intentions to exercise and adopt healthier eating habits. On the whole, the findings can be said to confirm the hypothesized relationships in the research model and also suggest that avatar recognition, immersion and enjoyment of the players are key factors that contribute to the intentions of the individuals to engage in healthier lifestyle behaviors.

Table 4: Direct Path

Path	β	t	p	R ²
Player Avatar Identification → Immersion	.763**	21.67	< .001	.582
Player Avatar Identification → Enjoyment	.712**	18.23	< .001	.507
Immersion → Exercise Intention	.344**	6.63	< .001	.118
Enjoyment → Exercise Intention	.502**	10.51	< .001	.252
Immersion → Healthy Food Intention	.276**	5.20	< .001	.076
Enjoyment → Healthy Food Intention	.465**	9.37	< .001	.216

The indirect effects of avatars identification of the player on health-related behavioral intentions via immersion and enjoyment were analyzed by using the Hayes PROCESS macro of Model 4 with 5000 bootstrap samples to analyze the mediator. The findings show that avatar recognition of players is an important predictor of immersion ($b = .763, p < .001$) and enjoyment ($b = .712, p < .001$). In addition, immersion and enjoyment both predict exercise intention and healthy food intention significantly. lifestyle practices.

Table 5: Indirect path

Indirect Path	Effect	Boot SE	Boot LLCI	Boot ULCI	Result
PAI → Immersion → Exercise Intention	.262	.041	.185	.346	Supported
PAI → Enjoyment → Exercise Intention	.357	.049	.266	.453	Supported
PAI → Immersion → Healthy Food Intention	.210	.039	.142	.294	Supported
PAI → Enjoyment → Healthy Food Intention	.331	.046	.247	.421	Supported

The outcomes of the bootstrapping indicate further that the indirect effects are significant since the confidence intervals are not within the range of 0. Particularly, immersion is a significant mediator of the association between player avatar identification and exercise intention ($b = .262$, 95% CI [.185, .346]) and health food intention ($b = .210$, 95% CI [.142, .294]). In the same vein, fun also plays a major mediating role between player avatar identification and exercise intention ($b = .357$, 95 per cent intercept [.266, 453]) and healthy food intention ($b = .331$, 95 per cent intercept [.247, 421]). These results suggest that immersion and enjoyment are valuable psychological processes that can be used to guide avatar identification in players to affect the intentions of players to adopt healthier

Discussion

The current research reviewed the effects of player avatar identification on health-related behavioral intentions, which are the exercise intention and the healthy food intention, mediated by the factors of immersion and fun in digital games. The results support the conceptual model and can be used to explain that psychological interaction with avatars may influence the experiences of players in-game and, in turn, have an effect on their behavioral intentions in the real world. To begin with, the findings suggest that avatar identification of players is a major predictor of immersion and enjoyment. This observation can imply that in the case of players who attach a lot to their avatars, there is a higher chance that they become psychologically engrossed within the game space and enjoy the game itself to a greater degree. These findings are in line with the existing studies that indicate that identification with avatars increases the level of emotional engagement and involvement in virtual worlds (Klimmt et al., 2009; Van Looy et al., 2012). Identification theory explains that players tend to see the world through the eyes of the virtual character, and in the process, they temporarily fuse their self-concept with the virtual character, which increases emotional and cognitive involvement in the game (Klimmt et al., 2009). Subsequently, more intense avatar identification will be able to elevate the immersion and enjoyment of playing.

Second, the results indicate that the immersion has a positive effect on exercise intention and the intention to eat healthy food. This implies that more immersion into playing games can go beyond the virtual world and influence the behavioral attitudes and intentions of players in reality. It is also established that immersive experiences affect cognitive and emotional reactions that can later impact the behavioral intentions and decision-making (Jennett et al., 2008). Immersive environments can generate the most impactful experiential learning experience in the context of health-related behaviors and can shift the attitude toward lifestyle choices. Third, the findings indicate that enjoyment is a major predictor of exercise intention and healthy food intention. It has been well established that enjoyment is a major motivation in digital gaming and interactive media experiences (Ryan et al., 2006). In self-determination theory, intrinsic fun is a great motivator of behavior and motivation. When people experience positive emotions upon playing the game, they might be carried over to the development of positive attitudes and intentions towards similar behavior under the game setting (Ryan et al., 2006). In the current research, the correlation between enjoyment and health-related intentions was found to be positive, which also indicates that positive gaming experiences might be indirectly stimulated to induce players to adopt healthier lifestyle behaviors. Above all, the mediation analysis suggests that immersion and enjoyment are important psychological processes that determine how the identification of the avatars of the players affects health-related behavioral intentions. This observation confirms the idea that the experience of the game may be more than just entertainment and may affect attitudes and intentions in the real world. It has been noted that games have the potential to affect behavior as they allow people to engage psychologically and

experience immersion to an extent (Peng et al., 2013). Interactive games in the form of digital games can develop rich experiences that build perceptions and intentions about real-life behaviour by enabling players to be avatars and experience interactive worlds.

Conclusion

This paper has discussed how player avatar identification fosters the formation of health-related behavioral intentions to exercise intention and healthy food intention via the mediating effects of immersion and gaming enjoyment. The results show that a stronger association with game avatars is a definite boost to the player in terms of experiencing the game and enjoying the gameplay. These psychological experiences, on the other hand, have a positive impact on the intentions of the individuals to behave in healthier lifestyles. The findings also indicate that both immersion and enjoyment are important mediating variables between the player avatar identification and health-related intentions. Players with both emotional attachments to their avatars are likely to be much more engaged in the game and enjoy the gaming experience more. These enjoyable gaming moments seem to go beyond the virtual world and translate into the objective real-life intentions of the players to work out more and to have healthier food habits. Altogether, the results indicate the potential of the digital gaming setting as a platform for encouraging positive behavioral intentions regarding health and well-being. By promoting greater avatar identification and interactive experiences in games, game designers, and health intervention developers can utilize gaming as a novel tool with which to promote healthier lifestyle practices in gamers. The research thus adds to the current body of existing literature on the psychology of gaming, identification with avatars, and behavioral intentions by showing that immersive and fun gaming experiences can be significant in modifying health intentions in real life.

Limitations and Recommendations

This research has a number of limitations that must be noted, even though it will offer meaningful insights when interpreting the results. To begin with, the researchers utilized self-reported survey data, which can be prone to common method bias and social desirability bias, and that could have affected the responses of the participants. Second, the cross-sectional design restricts the possibility of establishing causality of the relationship among the identification of player avatars, gaming experience, and health-related behavioral intentions. Future studies ought to take into account longitudinal or experimental study designs to understand causal effects and longitudinal change in behavior. Third, the sample mainly consisted of students and active gamers, which can restrict the overall applicability of the results to other population groups. The future research should involve more diverse demographics and gaming communities, as they will help to increase external validity. Also, this paper is centred on the immersion and enjoyment as mediation of effects, but other psychological variables like motivation, self-efficacy or socialisation in the gaming context might also have effects on health-related intentions. Consequently, upcoming studies ought to investigate other mediating and moderating factors to come up with a more profound comprehension of the potential of the gaming experiences in affecting the actual health practices.

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