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Motivations of playing digital games: A review and research agenda

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Citation:

Cheah, I., Shimul, A. S., Phau, I. (2022). Motivations of playing digital games: A review and research agenda. *Psychology & Marketing*. (In press). <https://doi.org/10.1002/mar.21631>

ABSTRACT

The global digital gaming industry has grown rapidly in recent years. Rapid technological advancements are changing the ways in which players can interact with video games as individuals and collectives. In addition to the increased penetration of games, the reasons for which people play and employ games need careful attention. In this paper, we have systematically reviewed the peer-reviewed journal articles ($n = 91$) relevant to the gamers' motivations of playing digital games. In addition to analysing the publication trends, we have identified and discussed a set of six key motivational themes (immersion and flow, gratification and affect, escapism, social interaction, identification, and goal orientation). Subsequently, we call for further research on theoretical and methodological advancement as well as individual/social wellbeing and dark sides of digital gaming in relation to players' motivation.

Keywords

Digital game, gaming motivation, gameplay, immersion, flow, systematic literature review.

1. INTRODUCTION

The global gaming industry, especially the digital game market, has grown rapidly in recent years. The increased penetration of games into popular culture has augmented the concept of ‘play’ and the role games play in our lives. Innovations in hardware and software battle with a longing for the past amongst player bases of broad generations and diverging lifestyles (Barr and Copeland-Stewart, 2021; Evans et al., 2021; Wickramasinghe et al., 2020). Subsequently, a diverse array of business models (e.g. freemium, streaming, remakes, franchises) have emerged to cater to highly fragmented player bases. Each changes how players can interact with digital games as individuals (e.g., gamers, parents, and children) or collectives (e.g., communities, networks, and subcultures) and subsequently their lived experience, consciousness, and behaviour (Badrinarayanan et al., 2015; Wang et al., 2019; 2020). With greater connectivity and processing power brought about by the proliferation of console, online, and mobile technologies, new forms of games are emerging (e.g., advergaming, AR games, and social media games) for a multitude of different platforms, each mediated through digital technologies that cater for differing gaming needs and practices (e.g., social gaming, hard-core gaming, couch gaming, and eSports). Moreover, another complementary development can be seen in the context of ‘gamification’, where game design is increasingly being applied towards the goals of marketing (Wu and Hsu, 2018; Cota et al., 2015; Hamari and Koivisto, 2013).

Although stereotypes are common, there is a scarcity of systematic research on player types and motivations. Hence, a contemporary understanding of player types and motivations becomes essential. Yee’s (2006) seminal paper pioneered the research on player motivations in online games and provided an early foundation to understand and assess how players differ from one another and how motivations of play relate to age, gender, usage patterns, and in-game behaviours. However, the players and the digital gaming space (e.g., technology, game genres, types, play and styles) has since evolved and grown in complexity over the past 14 years. Furthermore, the developing literature on this topic is far from homogenous and needed categorisation for better comprehension of the previous work. Hence, it is imperative to document and collate the current progression of the literature for the purpose of identifying new knowledge gaps, outlining and prioritising directions for future research.

Building on that premise, this research proposes that one way of adding value to the growing understanding of motivations for play in digital games is through the form of a

systematic literature review. As such, the aim of this article sets out with the objective of deepening the present understanding of player psychology namely player's motivation in the domain of contemporary digital games. Noteworthy, we have used the term 'digital game' interchangeably with 'online game', 'video game', 'computer game', and 'mobile game'. Admittedly, a broad objective, such is necessary when considering the countless ways that digital games touch our lives. Moving forward, three objectives are proposed:

1. To identify the themes for players' motivations with the context of digital gameplay.
2. To analyse the publication trends for understanding the current state and progression of research on motivations for digital gameplay.
3. To identify gaps that research has yet to address and offer future directions that researchers should take on that can help advance the field.

2. METHODOLOGY

We followed the guideline and procedure recommended by past research on systematic literature review (e.g., Paul and Criado, 2020; Webster and Watson, 2002). This structured review systematically and scientifically focuses the papers that examine the players' motivation of playing digital games. We searched in the recognised databases such as Business Source Ultimate, Web of Science, Scopus, and ProQuest using the keywords: "motivation and digital game(s)", "motivation and video game(s)", "motivation and online game(s)", "motivation and computer game(s)", "motivation and mobile games", "motivation and game(s)".

We limited our search into the research articles written in English language and published in the peer reviewed journals only. In addition, a thorough search was conducted on Google Scholar with the keywords such as "why people play *** games" to capture additional papers. A list of 844 unique papers were retrieved through the searches. Thereafter, we reviewed the titles, keywords and abstracts to identify the papers that belong to the domain of players' motivations behind playing digital games. Also, only the papers published in ABDC ranked and Scopus indexed journals were considered. This process resulted in 128 papers for further assessments. Then we studied each paper carefully to decide whether the article examines, investigates or reviews the players' motivation behind playing digital games.

There were some studies that merely mentioned 'motivation' within the gameplay related context, but did not emphasise on the motivational factors. For instance, a good number of papers examined "video game addiction" whereby 'motivation' was briefly mentioned, but

did not capture the gameplay motivation. Throughout this process, a total of 91 papers were retained for the final systematic review. Noteworthy, references from the identified articles were checked to include additional related studies.

=== **Figure 1 about here** ===

3. PUBLICATION TREND

3.1 Journals

Research on digital gaming has been evident in journals across various fields including science, business and humanities. A recent special issue from *Psychology & Marketing* on “Digital Gaming and Marketing” (Phau et al., 2020) has published papers in the area of virtual reality games (Bender and Sung, 2021), gamification via mobile applications (Kunkel et al., 2021), gamers’ divergent behaviour (Sharma et al., 2021), game mechanics and serious games for sustainability (Whittaker et al., 2021), game streaming (Yoganathan et al., 2021), game experience (Wang and Hang, 2021), and AI powered avatar (Butt et al., 2021). While searching in the databases, we came across hundreds of journals that published papers on digital games. However, the articles reviewed in this paper are published in 38 journals. As summarised in the Table 1, about one-fourth papers were published in the *CyberPsychology, Behavior & Social Networking* (previously known as *CyberPsychology & Behavior*), followed by *Games and Culture*, *Computers in Human Behavior*, and *International Journal of Human-Computer Interaction* respectively.

=== **Table 1 about here** ===

3.2 Years of publications

As shown in Table 2, there is no particular trend noticed in the publication of journal articles on players' motivations behind playing digital games. However, 44% of the reviewed 91 articles were published during 2018 – 2021 (July). This trend indicates that scholars have shown greater interest into the digital gameplay motivations over recent years.

=== Table 2 about here ===

3.3 Statistical methods

Structural Equation Modelling (SEM) has been found as the most commonly used statistical method in digital gameplay motivation research. A total of 37 papers used SEM as the data analysis technique. Simple linear regression was evident in 13 papers. While 9 papers utilised qualitative approach only, 11 papers had a mixed method (combination of qualitative and quantitative). Other statistical methods included ANOVA, experimental design, cluster analysis, and correlation tests. A summary of the statistical methods used in the digital gameplay motivation research is presented in Table 3.

=== Table 3 about here ===

3.4 Theoretical frameworks

Current research on digital gameplay motivations hinges heavily on Uses and Gratifications (U&G) framework and self-determination theory. In addition, Technology Acceptance Model (TAM) and Social identity theory are utilised as well. An in-depth examination of published research papers show that U&G framework and social identity theories have been employed in explaining players' experience, perceived enjoyment and identification with the games. A large number of studies were underpinned with self-determination theory while providing empirical support towards gamers perceived challenge

and achievement from the games. Furthermore, the social aspects of digital gameplay were explored within the notion of social role theory and social cognitive theory.

A list of widely used theories are enlisted in Table 4.

=== Table 4 about here ===

4. THEMATIC ANALYSIS OF MOTIVATIONS

This paper examines key research that relates to player motivation towards playing digital games, in particular to delineate the relevant social and psychological themes that govern player motivation and therefore provide meaning to the activities that occur in and around every day gaming practice. A thematic analysis on the sample of 91 articles was carried out to identify major themes and sub-themes in the articles. Articles were then grouped together on the basis of similarity in themes. These themes were varied but pertained to player's characteristics, motivation, and experience to engage in playing and continuance intention to play digital games. Equally important, but somewhat lesser research work, focused on player co-creation behaviour, and the impact of gender specific traits on game play design and game mechanics. Through this process, six themes were identified in this analysis: 1) immersion and flow; 2) gratification and affect; 3) escapism; 4) social interaction; 5) identity and 6) goal orientation.

4.1 Immersion and flow

As digital games evolve from simple activities such as shooting as many aliens as possible (*Space Invaders*), manipulating one or more balls around targets, bumpers, ramps (*Pinball*) or tile-matching lines by moving differently shaped pieces (*Tetris*) to vast complex worlds (*World of Warcraft*) offering sophisticated back stories and opportunities to create your

own oasis with unlimited building resources (*Minecraft*), so must the player (user) experience (Sánchez et al. 2012; Lee, 2015). Within the context of digital gaming or gameplay experiences, immersion, flow and gameplay are conceptual constructs, which in their own way are used to denote the quality of a game (Butt et al., 2021; Lou et al., 2020). Immersion continues to appear as an important component of the gaming experience and one that players actively seek when they play games (Zsila et al., 2018). For example, motion-sensing games are showing the development trend of combining AR (Kim et al. 2019), VR (Butcher et al., 2020), MR (Krukowski and Vogiatzaki, 2017), and more recently AI (Butt et al., 2021), and other advanced technology, as well as developing more accurate and efficient motion-sensing equipment and wearables (Bender and Sung, 2021), which will bring players far more immersive experience, an all-round perception of entertainment in the future and motivate their continuance intention to play.

Psychologically, the core idea of the flow theory (Csikszentmihalyi, 1975; Csikszentmihalyi, 1990) is the interplay between the subjectively evaluated challenges provided by the activity and the skills possessed by the respondents. The theory considers challenges and skills (e.g., game challenges and the skills of the gamer) as cognitive key antecedents, which are followed by different emotional outcomes. Furthermore, other attempts to characterize the experience of playing games from a theoretical analysis of games or gamers include Adams (2004) analysis of immersion, Freeman's (2004) and Schell's (2008) guidelines for designing gaming experiences or Calvillo-Gamez's et al. (2015) data driven theory of 'puppetry' which accounts for player agency within a game.

There have been a number of investigations into flow in digital games. For example, Fox et al. (2018) suggests a four-step game design methodology which would create player engagement and maximize the opportunity for flow. Game developers have been heavily motivated to account for key factors in the player's experience that make the game 'sticky' (Lee et al., 2017; Zhang and Kaufman, 2016; Wang et al. 2019), which in turn will increase player's motivation to play. Digital games that have a well-crafted narrative and story have found greater character identification and enhance playing and player experiences (Schneider et al. (2004). Furthermore, the time perspective and "frequency of play" (Lukavska (2012) were also

found to be important outcomes for player engagement and game flow. Last but not least, the fit effect of game characters and brand found that a flow state experienced when playing a game depends on how the player relates to the game as an activity which is based on the characteristics of games that allow gamers to master the game as the challenge develops (Kim et al. 2019).

Although the work on immersion and flow as part of the gaming experience is notably and thoroughly examined by many scholars and researchers, future research have prompted further studies (Kim et al., 2019; Shin 2019). One motivational force that receives little attention in psychology is passion (Wang et al. 2008), which could help advance our understanding in terms of how immersion and flow would contribute the motivation of gamers. One such future direction is to better understand the psychological functions involved in immersion and the design methodology necessary to achieve the best ‘balance’ of these functions within the context of digital gameplay and the same with flow mechanics, as a condition to gameplay.

4.2 Gratification and affect

Gratification is a form of enjoyment (Fang et al. 2010). Past studies have (e.g., Phillips et al. 1995; Vorderer et al., 2006; Bowman 2012; Olson, 2010) revealed gratifications uses of video game play, including “to pass time,” “to avoid doing other things,” “to cheer oneself up,” and “just for enjoyment.” In addition, research in psychology and neuroscience (Elliot and Thrash, 2002) have often used the term enjoyment to describe the affective state of the player and to explain positive reactions derived from computer game play (Yoon et al., 2013). Studies such as Chumbley and Griffiths (2006) and Hazlett (2006) explored affective responses during game play, and found that skill and in-game reinforcement characteristics significantly influence a number of affective measures, most notably excitement and frustration. Last but not least, enjoyment is the positive emotional experience (e.g., pleasure, delight, fun, entertainment etc.) perceived by the player while playing video games (Evans et al., 2021; Patzer et al., 2020; Bowman 2012; Hemenover and Bowman 2018; Olson, 2010).

In the extant literature, enjoyment has been identified as a key motivation behind playing digital games (e.g., Yoon et al., 2013; for a review, see – Lee et al., 2017). Enjoyment is one of the dimensions of the scale developed to measure the experiential value in online mobile gaming adoption (Okazaki, 2008). The study of Schutter and Brown (2016) reveals that participants enjoyed video games for their pleasurable emotional outcomes, contribution to personal growth, and perceived positive outcomes. These three categories further led to a theoretical model of telic, hedonic, and eudaimonic enjoyment within the context of digital games. Patzer et al (2020) examines the players' motivations, satisfactions and continuance intentions for video gameplay. The research model proposed by the authors examine enjoyment as a component of user experience satisfaction scale which also an antecedent of gameplay continuance intention.

A player's enjoyment is often driven by "completionist motive" which is a component of the "Trojan Player Typology" of motivation (Patzer et al., 2020). Online gaming enjoyment (e.g., fantasy motives) is also influenced by the players' prone to negative emotion and sensation seeking (Biolcati et al., 2021). In a similar vein, Cabeza-Ramírez et al (2020) consider tension release and entertainment as a single variable and find that the higher the users' tension release/entertainment motivation, the greater their use of video game streaming platform. By contrast, 'recreation', which might be considered a synonym of 'entertainment', did not have a significant direct effect on gameplay intention (Caci et al., 2019). However, players who are low in 'extraversion' score but higher in recreation tend to spend more time in playing games. It is noteworthy that, while enjoyment (e.g., fun) is positively and significantly associated with perceiving the game as more challenging (Evans et al., 2021), the continuous and unreduced effectance experiences will contribute to overall enjoyment, because effectance is a basic determinant of enjoyment (Klimmt et al., 2007). In line with past similar studies, Lin et al (2012) find that perceived enjoyment results in continuance intention for physical games as well. Moreover, perceived enjoyment is driven by challenge, interactivity, ease of use and design aesthetics of the game. There are also other variables that directly and indirectly influence perceived enjoyment. For instance, Klimmt et al (2009a) find that a higher level of suspense makes a video game more enjoyable. The notion of suspense has further been explained as the two emotions of hope and fear. In addition, Mourlad et al (2019) show that both hope and fear have strong positive effects on suspense which in turn positively influences the perceived enjoyment of the video games. Moreover, the positive relationship between

suspense and enjoyment is mediated by satisfaction, disappointment, relief, and anguish. In case of multiplayer browser games and online group gaming, players' anticipated enjoyment is often a result of the social relationships and interactions as well as time-flexibility (i.e., "easy-in, easy-out) involved in the gameplay (Klimmt et al., 2009b; Gong et al., 2019). Overall, it has been evident in the literature that perceived enjoyment positively impacts the players' positive emotion and time spent in playing the digital game (e.g., Dwyer et al., 2018).

4.3 Escapism

Escapism is predominantly assumed to be a negative aspect of media consumption (Hagström and Kaldo, 2014). Escapism refers to escaping from the problems, unpleasantness or mundaneness of reality, or distracting an individual's attention from the negative feelings they are experiencing in the present moment (Laor, 2020). 'Escapist' players are defined as individuals who use gaming to escape from real life (Kahn et al., 2015; Li et al., 2013). Over the years, research has highlighted that the motivation for escapism and immersive gaming are associated with negative psychological and social outcomes (Stetina et al., 2011; Kirby et al., 2014). Results show that individuals who engage in gaming to escape from real-life problems experienced negative consequences on wellbeing compared to others who played to socialise (Griffiths, 2010). Similarly, studies by Yee (2006), Li et al. (2011) and Goh et al. (2019) have collectively found escapism found that increased play is associated with poorer psychological wellbeing, specifically where there is greater player motivation for immersion and escapism, which points towards a negative association between using games to escape from real-life problems and poor mental health. Moreover, 'escapist' gaming may act as a coping strategy for dealing with real-life difficulties, this was associated with more problematic outcomes (Stetina et al., 2011). However, and more recently, studies are starting to indicate that escapism may spur positive psychological outcomes (Stenseng et al., 2021; Li et al., 2015). For instance, the increase of mobile, portable handheld consoles coupled with augmented reality (AR) games are known to provide ease of access which gives players convenience of playing the game anywhere and at any time, thus reinforcing escapism (Laor, 2020; Ghazali et al., 2019) as a means to de-stress or distract themselves unpleasant situations and negative mood states (Norby et al., 2019).

4.4 Social interaction

Social factors profoundly impact user behaviour (Barr and Copeland-Stewart, 2021; Evans et al. 2021). Many digital games today encourage some level of interactivity between their players, whether internal, i.e. directly embedded as part of the game itself, or external, i.e. via discussion forums and social media networking sites as means to facilitate dialogue and connection with players of the particular game (Yee, 2006; Griffiths, 2009; De Schutter 2011; Cabeza-Ramírez et al. 2020). A study by Wohn et al. (2010) suggest that players are often motivated to play social games to create common ground, experience reciprocation, cope, or pass the time and experience a sense of escapism. Furthermore, Van Reijmersdal et al. (2013) study on gendered gaming found that social interaction and interest in the game's topic (i.e., modelling) are the most important motivations for playing pink games such as *goSupermodel*. The extrinsic elements of playing social games include communal achievements and reputation amongst other players (Wickramasinghe et al., 2020; Jimenez et al. 2019).

Social norms, attitude, and flow experience significantly and directly affected intentions to play on-line games (Hsiao and Chiou, 2012); and that individuals find pleasure socialising in online games, which generates positive attitudes towards the game, and leads to increased loyalty and stimulates continued use (Badrinarayanan et al., 2015). In fact, Hsu and Lu (2004) found that social norms have a direct impact on the adoption of on-line games. For example, users may feel obligated to participate because they want to belong to a community such as evidence from playing 'Pokémon GO' leads to better family social interactions and community-building. Therefore, the concept of interpersonal influence is interesting in that it acknowledges that individuals don't make decisions in a bubble and more so it is likely that the environmental leanings of friends and family will influence how individuals feel about digital games. Several social and psychological theories such as the uses and gratification theory (Ghazali et al., 2019), theory of reasoned action (Wu and Liu, 2007), the theory of planned behaviour (Wickramasinghe et al., 2020), and the technology acceptance model (Hsu and Lu, 2004), which applied social factors to explain user behaviour towards digital games and game play.

Similarly, a player's loyalty towards a game has been found to be influenced by the level of social interaction players engage with and experience (Graham and Gosling, 2013; Seok and DaCosta, 2015; Dwyer et al. 2018). This process includes creating deep connections with other players creates a sense of enjoyment as they work together to complete various

challenges and tasks, and attain rewards and achievements together within the game (Badrinarayanan et al., 2015; Wang et al. 2019). Hence, in order for games to create a positive link between social interaction and enjoyment, the game must support both competition and cooperation between players, and facilitate communication both in-game, as well as via external means such as dedicated online forums (Okazaki, 2008; Johnson et al., 2016; Liu et al. 2020)).

4.5 Identification

Identification is defined as a cognitive state of psychological attachment denoted by the perception of oneness with or belongingness to a social referent and experiencing its successes and failures as one's own (Ashforth and Mael, 1989). A study by Przybylski et al. (2012) that investigated players' actual-self and ideal-self characteristics toward game play experiences found that "video games were most intrinsically motivating and had the greatest influence on emotions when players' experiences of themselves during play were congruent with players' conceptions of their ideal selves" (Przybylski et al. (2012, p. 69). This suggests that identification is likely to occur when an entity satisfies one or more self-definitional needs such as self-categorization, self-distinctiveness, and self-enhancement (see Tajfel and Turner (1986) and Hogg and Abraham (1988) perspectives on 'Social identity theory'), which in turn motivates individuals to instinctively work toward the benefit of that entity.

A number of theorists have identified virtual environments, such as massively multiplayer online games (MMOGs), massively multiplayer online role-playing games (MMORPGs) and other similar digital gaming contexts, as rich environments for the development of the self (Badrinarayanan et al. 2015). For example, the popularity of violent video and computer games among adolescent males could be explained by the fact that such games provide players with opportunities to experiment with different identities (Olson, 2010) such as masculine identities (Kirsch, 2006). Throughout the review of literature, there are several social and psychological theories that have supported the use of game character identification (Butt et al. 2021; Li et al., 2013) and identification with players (Badrinarayanan et al. 2015) to explain gamer motivations. The theory of identity-based motivation (Oyserman et al. 2007) suggest that behaviour is identity infused rather than merely following personal choices. For example, playing massively multiplayer online games (MMOGs) such as World of Warcraft (WoW) suggest that "in-game socializations are influenced by player's WoW

identity (one's perceived uniqueness of playing WoW as opposed to other online games) and the guild member identity (one's perceived pride and honour of belonging to a particular WoW guild)" (i.e., Obst et al. 2018, p. 655). Thus, gamers' motivations for playing WoW are likely driven, at least partly, by their identities in the WoW context. Based on social role theory (Eagly and Koenig, 2006) and uses and gratifications (Ko, Cho and Roberts, 2005; Curras-Perez, Ruiz-Mafe, and Sanz-Blas 2014) past studies (i.e., Van Reijmersdal et al., 2013; Jenson and De Castell, 2011) have observed gender stereotypic portrayals or 'gender rift' in gaming with respect to game genre preference. For example, Van Reijmersdal et al., (2013) suggest that 'pink games' provide an opportunity for game-playing girls to identify with the game character and its social role. Similarly, 'Player–Avatar Identification' (Li et al., 2013) is a concept that follows a stream of research highlighting the importance of 'diffused identity style' (Butt et al. 2021) on absorption during play and importance to identity (Cohen, 2001). Finally, in line with the social comparison theory (Festinger, 1954), gamers might be motivated to seek feedback about their abilities to confirm a stable and accurate self-view. As a result, rivalry and social reasons to interact with other gamers, develop oneself, or get recognition are included in video-game products (Søraker, 2016).

4.6 Goal-orientation

Achievement goal orientation is an important line of research in the field of achievement motivation (De Schutter 2011; Zhang and Kaufman, 2015). Within the context of digital gaming, competition is considered a component of achievement that reflects the intention to challenge and compete with others (Yee, 2006; Cota et al., 2015). The relationship between desire for achievement/competition, goal orientated tasks, and gameplay motivation has been evident in the current literature (e.g., Obst et al., 2018; Fang et al., 2009). Broom et al (2019) find that the players' desire to experience competition that provides opportunity to compete with both themselves and others is a key motivation behind using Pokémon Go' application. Achievement motivations provide a direct goal-setting function in the players' mindset (Groening and Binnewies, 2019; Winand et al., 2020) whereby perceived challenge can enhance the players' perceived enjoyment and intention to continue the gameplay further (Lin et al., 2012). Players' level of engagement to achievement-oriented activities is influenced by their emotional aspects (e.g., intelligence) as well (Herodotou et al 2015). For instance, when players fail in achieving the desired goal, the perceived challenge creates frustration that

amplifies continuance intention of the games (Zhang and Kaufman, 2015). Therefore, the challenge factor in digital gameplay may stimulate the level of frustration that in turn reduces the perceived enjoyment (Dwyer et al., 2018; Hamari et al., 2019). In line with this, Lo et al (2019) argue that if the game has more randomisation (i.e., with traps) and difficult levels, players find the game more challenging and show a greater willingness to continue the gameplay. Such unexpected difficulties further enhance the perceived enjoyment and playfulness (Lin et al., 2012). Thus, challenges in the gameplay create a greater level of passions that strengthen the desire for achievement (Fuster et al., 2014). However, there are few studies that reveal a counter-intuitive finding that competition either a weak or non-significant predictor of the time invested in playing digital games (Hamari et al 2018; De Schutter, 2011). In this regard, Evans et al (2021) note that if the players find the game more interesting, they will be motivated to play the game with a purpose of achievement. Thus, the current literature largely supports that players were motivated to play digital games to achieve their goals and fulfil their needs for competency (Zsila et al 2018; Winand et al., 2020).

A summary of the studies related to each theme is presented in Table 5.

=== **Table 5 about here** ===

5. FUTURE RESEARCH

Based on the results of literature review and thematic analysis, there exists room to further refine the research that examines the relationship between people and their games. The possible future research avenues are advocated as follows:

5.1. Theoretical framework

Extant research on gameplay motivation is heavily relied on U&G framework and self-determination theory. Academic research should test various player motivation models (e.g., VandenBerghe's five domains of play, self-determination theory and/or Rigby's PENS framework) in different contexts, across different regions to check the relevancy and effectiveness (VandenBerghe, 2012; Rigby et al., 2011). In particular, theories related to

personality and individual differences as well as social psychology need to be examined within digital gameplay motivation. For instance, the relationship between players' perceived uncertainty and motivation can be explored through utilisation of grounded theory. In particular, we echo with Noy et al (2006) that manipulating the players' social interaction and cognition would provide the scope of exploring a series of social theories to learn whether (or not) physical world paradigms apply in the cyberspace. Future research can also utilise actor-network theory to improve gaming design and players' interactions that subsequently may influence the gameplay motivation. The current understanding of players' mentality and adopted gaming more can further be advanced by motivational intensity theory. We also warrant for advancing the Technology Acceptance Model in relation to current surge of augmented reality (AR) and virtual reality (VR) games. By conducting empirical studies that seek theoretical advancement, implications for practices will also start emerging. Scholars can investigate if by increasing the participation of gamers and lead users through aligning game elements and mechanics to player's preferences, designers would then also increase player's commitment. This would help answer some fundamental yet evolving research questions such as "why do users first pick up a game?", "why do they keep playing it sometimes for years on end?" and/or "when the player puts down the controller, what will they walk away with?"

5.2. Methodological advancement

Most of the current empirical papers investigating digital games use positivist methodologies. Data collected through polls, questionnaires and surveys are heavily reliant on the scales of measurement. Future research should be weary of outdated measurements which may create a reification problem (Lane et al., 2006), a situation when many papers cite or use a measurement however only a few uses it substantively. The scale's length is often responsible for the scarcity of studies, thus further reinforcing the importance of adapting and/or appropriating scales of measurement (e.g., developing a short version of the scale) to the context of study. Along with quantitative empirical studies, academic scholars should employ a variety of research methodologies including an analysis of longitudinal app data, interviews and focus groups, psychophysiological analysis, a field study of a serious game, and netnographic exploration when investigating future research topics. In particular, longitudinal studies would provide empirical evidence regarding players' gaming motivation across different stages of their life cycle. Similarly, research adopting longitudinal approach can also provide insight on the interplay between games' and gamers' life cycles. Studies can adopt time series analysis to identify the specific changes over the years. One can also argue that

gameplay motivations depend on the players' personal and socio-psychological traits (Badrinarayanan et al., 2015; Sharma et al., 2020). Therefore, studies on segmenting the gamers would provide novel insights into gameplay motivations. We also warrant for additional research to understand consumers' psychophysiology in gaming research. The limitations of self-reported measures can be addressed by measuring consumers' specific emotions (e.g., joy, anger, frustration etc.) thorough psychophysiological measurements such as eye tracking, skin conductance, brain wave and heartbeats in relation to players' motivation for digital gameplay. Such variety in research methods would further evidence the vast span of creativity and technical nous that digital games harness, and the diverse perspectives scholars and practitioners use to understand these intriguing phenomena.

5.3. Individual and social wellbeing

Current literature suggests a set of physical and social benefits of digital gameplay. While the notion of maintaining social connections, improving life satisfaction through enjoyment and achievement, and stimulating open-mindedness have been evident in our review, future research may empirically (perhaps through longitudinal studies) examine how gamers may fight dementia and anxiety as well as improve mental health and critical thinking skills and maintain optimism about overall life. Referring to the health science literature, further research is warranted to examine whether increased mobility with certain types of gameplay (e.g., Pokémon GO) reduces physical pains due to medical conditions (e.g. arthritis) and improve physical wellbeing (Brand et al., 2017). The phenomenon of gaming disorder, depression and anxiety related issues have been evident in gaming literature. Therefore, additional research is necessary in understanding how game design can foster the players' psychological growth (Kowert et al., 2021). Future studies may further examine if identification with game Avatars can reduce mental illness (Ferchaud et al., 2020). Many people have negative attitude toward digital gaming due to the prevalent link between online gaming and suicidal tendency. Thus, it would be interesting to assess whether gaming community can facilitate peer support in reducing depression, anxiety and suicidal tendency. Taken together, the development of a stress-free virtual gaming environment could provide solution to the issues affecting the players' individual and social wellbeing. Throughout this review, we came across a large body of literature on gamification and its impact on education. We advocate additional research on examining the gameplay motivations in relation to the

intention of improving knowledge and skills (e.g., learning cooking and new language) at an individual level.

5.4. Socio-demographic variables

We noticed an emergence of research on the gaming behaviour of aging consumers and gender differences. While the findings of these studies provide intriguing insights, there has been a lack of research on the interplay of socio-demographic variables that might provide a better clarity regarding gameplay motivations. In particular, gamers' socio-psychological (e.g., risk taker vs risk averse) and cultural orientations (e.g., collectivist vs individualistic) might have a differential effect on their intention to play digital games. While most of the online games have multiple stages/levels and players are motivated to continue playing for further achievement, little is known whether the players' cultural orientations have any impact on the gameplay intentions. The game and achievement related motivations might be framed by the social and cultural norms (Klimmt et al., 2009b; Gong et al., 2019). In a collectivist society, players might have more interactions than their individualistic counterparts. Therefore, the interpersonal and group influence may impact their gaming behaviour. For instance, players in a collectivist society might be concerned about face-saving while participating a multi-player game. This further opens the window of additional research on the players self-consciousness, self-image and self-esteem in gameplay motivations. In line with this, the impact of perceived "digital divide" and "social capital" might be examined within the context of gameplay motivations (Hsiao and Chiou, 2012). In addition, the stages in life-cycle may have a dynamic effect on the players' motivation. For instance, gamers might have less obligations at a younger age. However, the gameplay motivations may be changed at the later stage of life with increased personal, social and professional commitments. Future research may examine how the serious gamers cope up with the changes and respond to the intrinsic and extrinsic motivational factors. It would be worthwhile to assess whether new "fast and quick" mobile games (e.g., word/puzzle games) that might be played during lunch/coffee breaks could target the time-poor game enthusiasts.

5.5. Dark side of digital gameplay

While the sunny side of digital gameplay dominates the motivation related research, it would be imperative to examine the other side of coin as well. Academics and practitioners in the

digital gaming domain may examine whether excessive gameplay and gaming addictions demotivate the potential players to play a particular type of games. The ongoing concerns with video games and their impact on dopamine addiction, reduced enthusiasm, emotional suppression, mental and health issues, personal and social relationship disruptions, as well as poor academic or professional performances need attentions from researchers (Lal, 2020). There are empirical evidences that addiction towards violent games impact the real-life behaviour and social interactions. Future studies may examine whether game attachment (or addiction) creates envy, schadenfreude and related negative behaviour (Shimul et al., 2021). It has also been evident that the rapid advancement in technology is gradually changing the digital game-space and gamers' behaviour. For instance, live streaming of games online and monetary incentives (Subramanian et al., 2020) allure the new generation players into the game and simultaneously open the avenue of personal and social threats with potentially risky behaviour. Researchers and social policymakers have also raised concerns regarding animal cruelty, terrorism, bullying and discriminations within the game design. At the same time, game related gambling, sexual harassment, monetary fraud, and demeaning depictions of certain gender and race have attracted the attention of the policymakers in the industry (Lal, 2020). Also, parental control and interpretation of classification marking (e.g., G, PG, M, MA15+, R18+) are often unknown and misunderstood. In addition to the aforementioned burning issues, we call for future research on inclusion and diversity in digital game design and their impact on players' motivations.

The current body of knowledge and future research directions on digital gameplay motivations is synthesised in Figure 2.

=== **Figure 2 about here** ===

6. CONCLUSION

Digital game is fast becoming an important area of research within the field of psychology and marketing. The development of new technology (e.g., AI, AR and VR), new

game genres and game play styles (e.g., MMO, MMORPG etc) has significantly influence game design and altered consumers' psychological association with game adoption. However, as new knowledge emerges, more questions arise that need addressing. The main contribution of this article lies in the thematic categorization and / or clarification of the vast amount of publications focused on motivations to play digital games over the period 2004 – 2021 and the identification of several relevant gaps within each of these classifications. The major theme centred on the player's characteristics, motivation, and experience to engage in playing and continuance intention to play digital games allowed for various sub-themes to be identified. The shift toward more nuance discussions of the psychology of digital games and its effects on its users is meaningful. From function to design, collectively, these themes have outlined the necessary characteristic of a successful game that are namely setting goals, meeting challenges, planning strategies, and essentially controlling their own actions. Despite the many studies within multiple disciplines (e.g., health, sociology, information technology, and media studies etc) on digital games, much remains to be learned. Future research directions in terms of theoretical and methodological advancement as well as other areas of application such as generational research towards digital gaming; physical and social benefits of digital gameplay; the motivations toward digital gaming in the context of learning and teaching; and diversity and inclusion in digital game design and their impact on players' motivations have been delineated. This study is certainly not without limitations, in particular with the methodology used. For instance, the literature search may have failed to capture all papers on the topic of motivational factors towards digital games. This could be due to the search mechanisms and the nature of keywords used. Moreover, contributions such as chapters in edited books and similar editorials were excluded. Finally, this systematic literature review only showcases trends within a specific period of time, thus limiting the predictive capacity to determine influential papers within the field in the future.

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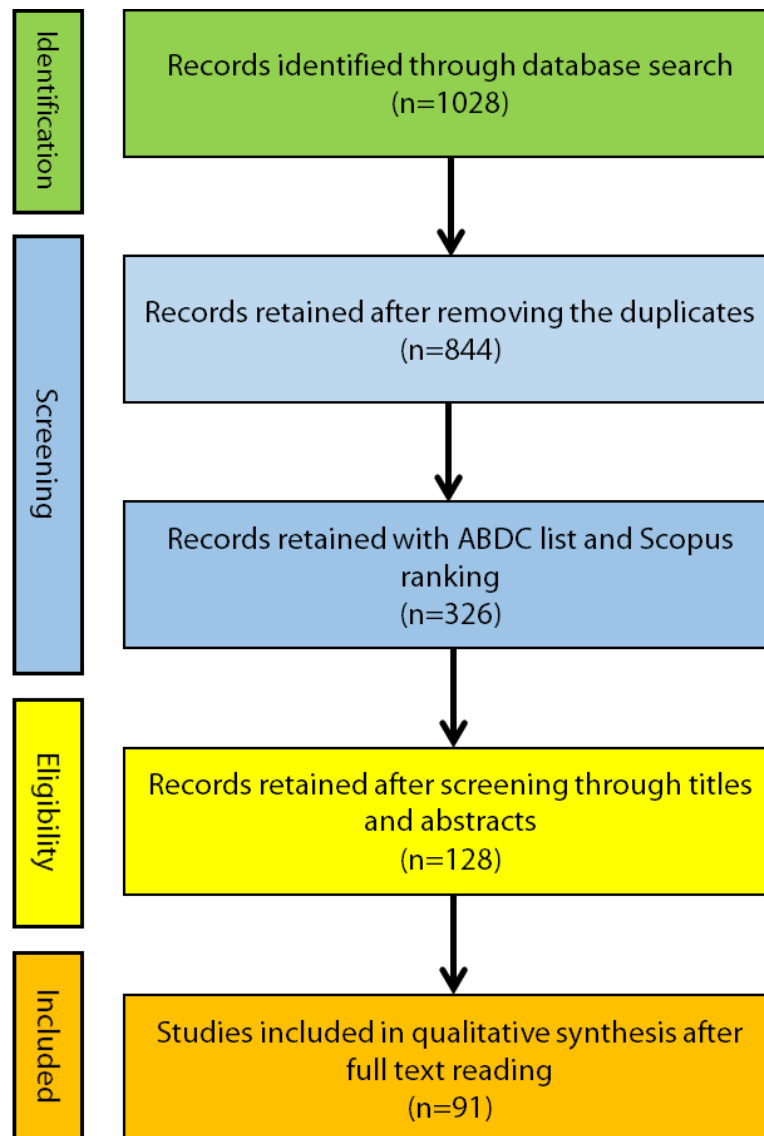
Figure 1. Steps in article selection for review

Figure 2. Synthesis of relevant constructs

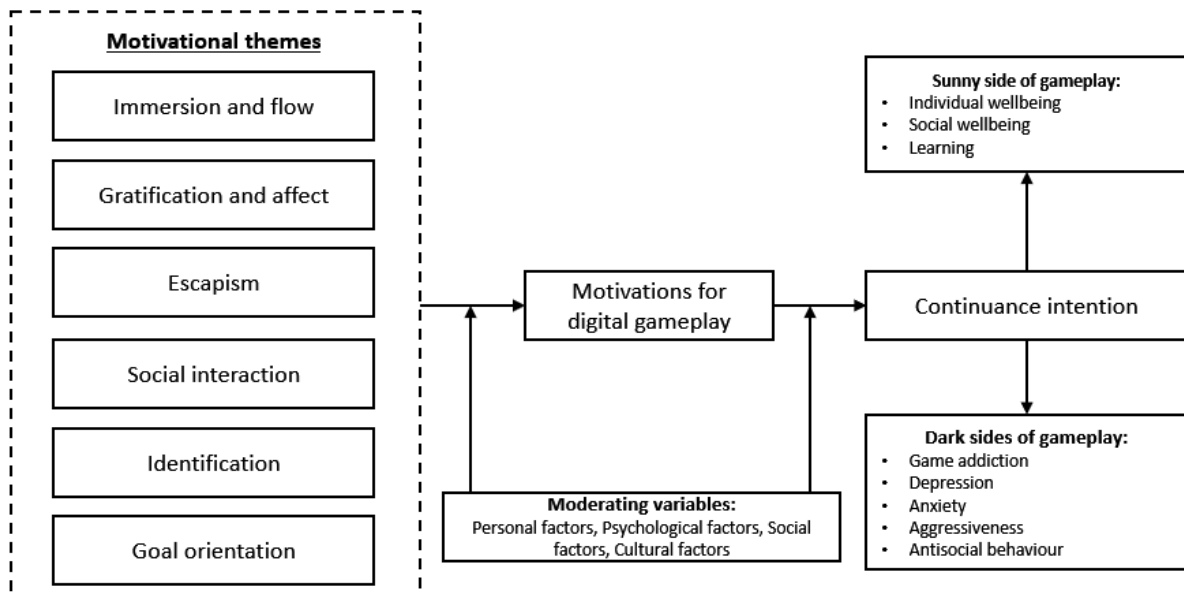


Table 1. Journal disseminating research in digital gameplay motivations

Journal name	Frequency	Percent
CyberPsychology, Behavior & Social Networking	22	24.2
Games and Culture	13	14.3
Computers in Human Behavior	7	7.7
International Journal of Human-Computer Interaction	6	6.6
Information & Management	4	4.4
Behaviour & Information Technology	2	2.2
Information, Communication & Society	2	2.2
International Journal of Environmental Research and Public Health	2	2.2
Journal of Business Research	2	2.2
Journal of Consumer Marketing	2	2.2
Simulation & Gaming	2	2.2
Other	27	29.7
Total	91	100

Table 2. Article publication trends (until 30 June 2021)

Year	Frequency	Percent
2004	3	3.3
2006	1	1.1
2007	2	2.2
2008	3	3.3
2009	6	6.6
2010	1	1.1
2011	4	4.4
2012	9	9.9
2013	4	4.4
2014	7	7.7
2015	6	6.6
2016	4	4.4
2017	1	1.1
2018	8	8.8
2019	15	16.5
2020	12	13.2
2021	5	5.5
Total	91	100

Table 3. Statistical methods used in the digital gameplay motivation research

Method	Frequency	Percent
SEM	37	40.7
Regression	13	14.3
Mixed	11	12.1
Qualitative	9	9.9
Experimental	6	6.6
ANOVA	4	4.4
Cluster analysis	2	2.2
Correlation	2	2.2
Review paper	2	2.2
ANCOVA	1	1.1
ANOVA and Regression	1	1.1
Content analysis	1	1.1
Latent Class Analysis	1	1.1
MANOVA	1	1.1
Total	91	100

Table 4. Theoretical underpinning

Theory	Studies
Uses and Gratifications (U&G) framework	Choi and Kim (2004); Hernandez (2011); De Schutter (2011); Van Reijmersdal et al. (2013); Cota et al (2015); Wu and Hsu (2018); Molinillo et al (2018); Dwyer et al (2018); Hamari et al (2019); Vaterlaus et al (2019); Jimenez et al (2019); Patzer et al (2020); Cabeza-Ramírez et al (2020); Butt et al (2021)
Self-determination theory	Wang et al (2008); Chang and Zhang (2008); Przybylski et al (2012); Dindar and Akbulut (2014); Johnson et al (2016); Fox et al (2018); Vella et al (2019); Broom et al (2019); Patzer et al (2020); Bhagat et al (2020); Winand et al (2020); Brühlmann et al (2020)
Technology acceptance model	Hsu and Lu (2004); Yoon et al (2013); Butt et al (2021); Harborth and Pape (2020)
Social identity theory	Kong et al (2012); Badrinarayanan et al (2015); Obst et al (2018); Sharma et al (2020)
Social cognitive theory	Davis and Lang (2012); Lee (2015); Bhagat et al (2020)
Theory of reasoned action	Davis and Lang (2012); Molinillo et al (2018)
Trait theory	Seok and DaCosta (2015); Jimenez et al (2019)
Social role theory	Van Reijmersdal et al (2013); Wilhelm (2018)

Table 5. Studies focusing on the motivations behind playing digital games

Theme	Studies
Immersion and flow	Schneider et al. (2004); Wang et al (2008); Lafreniere et al (2009); Lin and Sun (2011); Hernandez (2011); Sánchez et al (2012); Lukavska (2012); Zaman et al (2014); Bittner and Shipper (2014); Lee (2015); Zhang and Kaufman (2016); Lee et al (2017); Zsila et al (2018); Fox et al (2018); Kim et al (2019); Shin (2019); Wang et al (2019); Lou et al (2020); Liu et al (2020); Butt et al (2021)
Gratification and affect	Klimmt et al (2007); Okazaki (2008); Klimmt et al (2009a); Klimmt et al (2009b); Lin et al (2012); Yoon et al (2013); De Schutter and Brown (2016); Lee et al (2017); Dwyer et al (2018); Kim et al (2019); Gong et al (2019); Caci et al (2019); Moulard et al (2019); Cabeza-Ramírez et al (2020); Patzer et al (2020); Evans et al (2021); Biolcati et al (2021)
Social interactions	Choi and Kim (2004); Hsu and Lu (2004); Yee (2006); Cole and Griffiths (2007); Okazaki (2008); Chang and Zhang (2008); Klimmt et al. (2009a); Fang et al (2009); Hussain and Griffiths (2009); Quandt et al (2009); De Schutter (2011); Kallio et al (2011); Xu et al (2012); Hsiao et al (2012); Van Reijmersdal et al (2013); Graham and Gosling (2013); Zaman et al (2014); Fuster et al (2014); Seok and DaCosta (2014); Seok and DaCosta (2015); Herodotou et al (2015); Badrinarayanan et al (2015); Zhang and Kaufman (2016); Johnson et al (2016); Schell et al (2016); Dwyer et al (2018); Zsila et al (2018); Fox et al (2018); Obst et al 2018); Caci et al (2019); Shin (2019); Wang et al (2019); Broom et al (2019); Vella et al (2019); Vaterlaus et al (2019); Jimenez et al (2019); Kneer et al (2019); Cabeza-Ramírez et al (2020); Patzer et al (2020); Lou et al (2020); Liu et al (2020); Wickramasinghe et al (2020); Bhagat et al (2020); Wang et al (2020); Evans et al (2021); Biolcati et al (2021); Barr and Copeland-Stewart (2021)
Escapism	Okazaki (2008); Calleja (2010); Xu et al (2012); Davis and Lang (2012); Hagström and Kaldó (2014); Kaczmarek and Drażkowski (2014); Seok and DaCosta (2015); Goh et al (2019); Biolcati et al (2021)
Identification	Cole and Griffiths (2007); Bowman et al (2012); Przybylski et al (2012); Graham and Gosling (2013); Davis and Lang, (2013); Hussain et al (2015); Obst et al (2018); Wu and Hsu (2018); Gong et al (2019); Cabeza-Ramírez et al (2020); Wickramasinghe et al (2020); Sharma et al (2020); Brühlmann et al (2020)
Goal-orientation	Yee (2006); Fang et al (2009); De Schutter (2011); Lin (2012); Fuster et al (2014); Herodotou et al (2015); Cota et al (2015); Zhang and Kaufman (2016); Obst et al (2018); Dwyer et al (2018); Zsila et al (2018); Broom et al (2019); Groening and Binnewies (2019); Lo et al (2019); Hamari et al (2019); Winand et al (2020); Evans et al (2021)