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Investigating Psychological Disparities Across Gamers: A Genre-Based Study

Griffith, O. J.[*1] & Sharpe, B. T.[1]

[1]Institute of Psychology, Business, and Human Sciences, University of Chichester, Chichester, UK

Author Note

*Corresponding authors: Oliver J. Griffith, Institute of Psychology, Business and Human Sciences, University of Chichester, Chichester, PO19 6PE, United Kingdom. Email: ogriffi2@stu.chi.ac.uk. The authors hold no conflicts of interest associated with the publication of the following manuscript. Anonymized data can be made available upon request. Ethical approval for the study protocol was awarded by the lead institution.

Investigating Psychological Disparities Across Gamers: A Genre-Based Study

Abstract

Objective: While video games have become a widespread form of entertainment, the exploration of their relationship with psychological factors remains relatively limited. The primary aim of this study was to examine potential disparities in levels of everyday stress, perceived stress, and positive mental health among individuals involved in three distinct video game genres: horror, competitive shooters, and sandbox. Although the study maintains an exploratory nature, we anticipated the emergence of significant differences between these genres. **Method:** A total of 54 participants were recruited, queried about their primarily favoured video game genre, and then asked to complete an online survey consisting of three questionnaires, each corresponding to one of the dependent variables. **Results:** Three 1x3 between subjects ANOVA analyses indicated that levels of everyday and perceived stress were notably higher in the competitive shooter gamers, with sandbox gamers having the lowest levels. No significant differences were observed for levels of positive mental health. **Conclusion:** It is possible that competitive shooters either elevate everyday and perceived stress levels in individuals, or that already-stressed gamers are drawn to this genre. Finally, the absence of significant variations in levels of positive mental health across genres suggests that individuals may simply choose to play whichever game aligns with their personal sources of enjoyment.

Keywords: Horror, competitive-shooters, sandbox, everyday-stress, perceived-stress, positive-mental-health.

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Introduction

The rise of video games as a prominent form of entertainment is underscored by the remarkable success of titles such as Minecraft, which had reached sales figures of 238 million copies by 2021 (HP, 2021). Notwithstanding their pervasive popularity, video games represent a relatively modern phenomenon, continuously evolving in tandem with technological advancements, permitting an escalating individuality between genres. This ongoing evolution engenders a distinctive and compelling avenue for research, centred on exploring the typology (e.g., Hedlund, 2023) and/or psychological ramifications of video games on individuals (e.g., Poulus et al., 2024; Trotter et al., 2023). Notably, within the realm of video game research, there exists a notable dearth of investigations delving into the distinctions between various video game genres, such as horror, competitive shooters, and sandbox games, in relation to stress. Prevailing research trends have often favoured a more singular focus on individual game titles (e.g., Poulus et al., 2022a; 2022b; Sharpe et al., 2023a; 2023b; Trotter et al., 2020), theoretical application (Birch et al., 2023; Welsh et al., 2023), or singular genres (Smith et al., 2022), thus neglecting the broader spectrum of gaming experiences and their potential effects. For instance, Sharpe et al. (2023b) specifically delved into the impact of psychological pressure within the context of a competitive shooter. Their work not only examined the effects but also proposed avenues for future research aimed at developing interventions to alleviate the adverse consequences associated with negative perceptions of pressure (see Poulus et al., 2023 for an example intervention). However, it is crucial to recognize the diversity across video game genres. The recommendations derived from study focusing on one genre, like competitive shooters, may not universally apply to all video game titles. This is especially pertinent considering that certain genres may not inherently induce negative outcomes, such as heightened pressure, and may themselves be a used as an intervention tool for relieving anxiety (see Russoniello et al., 2009 for discussion). As such, the following study aims to explore the differences in everyday stress, perceived stress, and positive mental health on the above noted video game genres. We hope to offer initial insights into the potential impact of an individual's emotional states on their video game preferences, and conversely, whether their video game choices may influence their emotional well-being, while examining whether variations in stress levels and positive mental health exist among distinct groups of individuals based on their video game preferences. The present investigation represents a critical and substantial

endeavour in elucidating the intricate relationship between video games and psychology. It holds the potential to yield valuable insights into this dynamic connection.

The definition of stress is multifaceted and varies across publications. Cohen et al. (1995) noted the existence of confusion surrounding stress's precise definition, particularly when considering clinical and psychological contexts. According to the American Psychological Association (2022), stress is described as "the physiological or psychological response to internal or external stressors," encompassing changes that affect nearly every aspect of the body and influence emotions and behaviour. In other psychological terms, stress can be perceived as "occurring when an individual perceives that environmental demands tax or exceed his or her adaptive capacity" (Cohen et al., 1995; Cohen et al., 2007, p. 1685). In clinical contexts, the National Health Service (2022) characterizes stress as "the body's reaction to feeling threatened or under pressure," or as "a normal response when the body encounters changes, resulting in physical, emotional, and intellectual reactions" (Cleveland Clinic, 2021). Furthermore, Lu et al. (2021) offers a biological perspective, defining stress as "a state of homeostasis being challenged" (p. 78). While there is no significant contrast in the definition of stress between physiological and psychological realms, distinctions lie in the severity and emotional experiences associated with stress. As such, for the purpose of this study, we will adopt a comprehensive definition of stress, encompassing commonalities found in the definitions. Perceived stress, for the purposes of this study, is delineated as the subjective perception of the initial negative psychological or physiological response to stressors. The incorporation of this definition is rooted in recent literature that highlights significant positive and negative outcomes linked to engagement with video game titles (Machado et al., 2022; Poulus et al., 2022b). Furthermore, everyday stress in this study will be conceptualized as the initial negative psychological or physiological response to stressors, with the acknowledgment of its potential escalation. The rationale behind incorporating this conceptualization stems from the observed absence of such a variable in existing literature. We posit that the inclusion of everyday stress in our investigation adds a layer of novelty, aligning with the call from scholars to explore new insights into stress (Smith et al., 2022). This consideration enhances the exploratory nature of our study. Further, this study will specifically focus on every day or casual stress, including commonly experienced or typical stressors such as work, school, chores, or uncomfortable social interactions. Notably, this category of stress will exclude more significant or infrequent events, such as bereavement, life-threatening situations, or receiving distressing news like a medical diagnosis. In addition to examining stress, this study will also

investigate the concept of positive mental health. Positive mental health serves as a broader counterpart to stress, encompassing a more comprehensive assessment of an individual's well-being. While stress is a specific emotional response triggered by stressors, positive mental health pertains to the overall emotional, psychological, and social state of well-being (Keyes et al., 2002; Lukat et al., 2016).

Video Game Genres

Video games have garnered attention for their potential to alleviate stress and enhance mental health (Bowman & Tamborini, 2012; Reinecke & Eden, 2017; Rigby & Ryan, 2017; Carras et al., 2018). However, it is crucial to acknowledge the diverse array of video game genres, each offering distinct experiences and intended emotional impacts on players. As such, the assertion that video games universally contribute to stress relief and improved mental well-being cannot be assumed. To delve into this complex relationship, this study narrows its focus to three specific video game genres: horror, competitive shooters, and sandbox games, chosen for their distinctiveness and the unique experiences they offer players.

Horror

Horror games offer an experience purposefully crafted to induce fear and shock (Terkildsen & Makransky, 2019; Graja et al., 2021), which may seem to contrast with the expected enjoyment-based purpose of video games. However, the satisfaction derived from conquering these fears can lead to an overall improvement in mental well-being (Ntokos, 2018; Graja, 2021). Previous research has explored the allure of the horror genre, even though it elicits aversive emotions. Andersen et al. (2020) introduced the concept of 'recreational horror,' defined as a complex emotional experience encompassing fear and enjoyment (p. 1497). In the context of video games as recreational activities, this concept explains the coexistence of fear and enjoyment in horror video games. Nevertheless, it doesn't address why individuals are drawn to fear in the first place. One plausible explanation lies in the phenomenon of morbid curiosity, where individuals are intrigued by highly intense negative information (Zuckerman & Litle, 1986; Oosterwijk, 2017, p. 1). Oosterwijk conducted studies involving participants choosing between negative and neutral images, revealing a preference for images depicting death, violence, or harm within a social context over those featuring graphic physical harm or attacking animals. Morbid curiosity may elucidate why certain individuals are attracted to the horror genre and, more specifically, why they choose to engage with horror games. The

anticipation of encountering shocking or fear-inducing elements may be a driving factor for these individuals, and the satisfaction of this curiosity could potentially contribute to improved positive mental health.

Another explanation for the attraction to horror games can be traced to the concept of risky play observed in children. Sandseter and Kennair (2011) assert that risky play is crucial for infants as it naturally reduces phobic reactions and fosters the development of fear-responses. They suggest that adaptive fear, marked by boundary-pushing behaviors, can provide a sense of thrill as one explores the boundaries of fear and safety. This behavior might explain the appeal of horror genres, where players challenge the limits of what they find scary and engage in a confrontation with stressful stimuli. According to the theory of adaptive fear, horror gamers actively seek to confront stress, which could lead to decreased stress levels and heightened positive mental health. In line with this, Scrivner and Christensen (2021) proposed that many anxious individuals are drawn to the horror genre as a means of building psychological resilience with their research suggesting that horror enthusiasts reported greater psychological resilience during the initial months of the COVID-19 pandemic compared to non-horror fans. Cumulatively, prior research on horror genres suggests that these games can contribute to the cultivation of psychological resilience. Exploring fear-inducing stimuli can be thrilling, satiate morbid curiosity, and potentially resulting in decreased stress levels and enhanced positive mental health among horror gamers.

Competitive shooter games

Competitive shooter games offer a distinctive social experience, demanding players to be consistently engaged in combat-based scenarios (e.g., see Sharpe et al., 2023a for an example). Consequently, the levels of stress and positive mental health in these games hinge on factors such as a player's confidence and their level of investment in the competitive aspect of the game. It is noteworthy that individuals who choose to partake in competitive shooter games likely possess a strong inclination for competition (Park et al., 2016; Carras et al., 2018). Much of the research surrounding competitive shooter games has revolved around the concept of aggression, which has contributed to the ongoing debate regarding whether video games can lead to real-world violence. This debate is rooted in concerns that exposure to gun violence in video games might influence children and young individuals to adopt violent behaviours involving firearms. Hawk and Ridge (2021) utilised a modded version of the game Doom II: Hell on Earth to explore violence, difficulty and competition variables against aggression in

students (space marine VS. demons combat game, id Software, 1994; Hilgard, 2014; Hilgard et al., 2019). A post-game puzzle was used to gauge levels of aggression, finding indications that difficulty, violence levels, or winning or losing did not exert significant effects on aggression levels, only whether they engaged in the competition condition (the tangram puzzle procedure; see Saleem et al., 2015). Similarly, Schmierbach (2010) conducted a study involving university students who played the Xbox game Halo and found partial support for higher levels of aggression when in a competitive environment compared to cooperative. The presence of aggression and the aspiration for victory in a competitive environment can undeniably be stress-inducing, as it involves genuine stakes and formidable challenges. It is imperative to recognize that previous research, while suggestive of the potential for heightened stress levels among individuals engaged in this genre, falls short of providing comprehensive insights into the levels of positive mental health experienced by such players. Consequently, further investigation is warranted to gain a more thorough understanding of the psychological ramifications associated with participation in competitive shooter games.

Sandbox

Sandbox games offer a distinct gaming experience characterized by freedom and open-endedness, creating a more relaxed and controlled environment that can lead to reduced stress and improved mood states (Russoniello et al., 2009; Ocio & Brugos, 2009; Ferguson & Donnellan, 2017; Gabbiadini et al., 2017). This contrasts starkly with the intense and competitive nature of horror and shooter games. Prior research on sandbox games has consistently indicated their potential for fostering desirable and creative experiences. Chung and Lin (2022), for instance, employed a three-dimensional sandbox game called Creativerse to construct a 3D gamification problem-based learning model, aiming to enhance motivation and satisfaction among students. The study revealed that the gamified model significantly improved learning achievement, with the facilitating condition being the most critical determinant of learning satisfaction. Furthermore, many students recommended the adoption of this teaching approach. Sandbox games have also been harnessed to support literacy improvement, with the game Minecraft being utilized to assist students in visualizing ideas for their writing (Ellison & Drew, 2020). The results suggested that enhancements in creativity in ideas and vocabulary were present for some students, with creative writing improvement proving inconclusive. However, most students believed the intervention to be valuable in their creativity development. An essential aspect of sandbox games lies in the balance between

creation and destruction. The agency granted to players to create and destroy within the game world can serve as a form of stress relief, enabling them to manage stress levels at their own pace. However, when players witness their creations being dismantled by others, stress levels may rise, and positive mental health may decline. This phenomenon is commonly referred to as "griefing," and Beale et al. (2016) argue that most individuals who engage in online sandbox gaming for an extended period encounter some form of griefing at some point. In summary, prior research into sandbox games underscores their potential to engender a sense of freedom and creativity, leading to positive emotional experiences. This freedom also grants players the ability to release pent-up tension, thus providing a unique avenue for stress reduction and mood enhancement.

Aims of the Study

The genres incorporated in this study have been intentionally crafted to evoke fear or shock (e.g., Terkildsen & Makransky, 2019; Graja et al., 2021), enhance mood states (e.g., Ferguson & Donnellan, 2017; Gabbiadini et al., 2017), or involve competitive elements, as seen in competitive shooter games, which may associated with mental ill health (e.g., Smith et al., 2022). We anticipate the potential identification of disparities in everyday stress, perceived stress, and positive mental health among these genre-specific groups. It is crucial to acknowledge that, given the current state of research in this field, the primary focus of this inquiry remains exploratory in nature. Therefore, only tentative links can be established, and we encourage future researchers to further delve into and expand upon this work.

Method

Participants

A total of 54 participants (*M*age = 23.46, *SD* = 4.01) were recruited utilizing opportunist sampling methods, with the composition including both males (*n* = 13) and females (*n* = 39; two individuals opted not to disclose their gender). These participants were categorized based on their preferred video game genre, which encompassed horror (*n* = 10), competitive shooters (*n* = 17), and sandbox games (*n* = 27). The inclusion criteria stipulated that participants must primarily engage with one of the three specified video game genres. Individuals who primarily played two or all three of these genres were excluded from participation to ensure a meaningful comparison of stress levels between genres. Conversely, individuals who did not engage with any of the specified video game genres were also ineligible for participation. The studies primary distribution method utilised a research participation scheme at the lead university which offered course credits for participation. The determination of the sample size adhered to resource constraints imposed on the project, guided by earlier studies examining player emotions (*n* = 45; refer to Tu et al., 2022).

Measures

Perceived Stress Scale

Perceived stress was assessed using the Perceived Stress Scale (PSS). Originally, it consisted of fourteen questions (Cohen et al., 1983) but underwent a reduction to ten questions in 1988 following a factor analysis conducted on a sample of 2387 U.S. residents (Cohen & Williamson, 1988; Lee, 2012). Participants were provided with explicit instructions to respond to these ten questions, which inquired about the frequency of encountering specific situations and experiences over a designated period (e.g., "In the last month, how often were you upset because of something that happened unexpectedly?"). Responses to the questionnaire were captured using a 0-4 Likert scale, encompassing a range from 'never' to 'very often.'

Brief Daily Stressors Screening Tool

Everyday stress was measured using the Brief Daily Stressors Screening Tool (BDSST), a validated instrument developed by Scholten et al. in 2020. Participants were provided with explicit instructions to respond to a series of ten questions, gauging the extent to

which they had been impacted by typical annoyances and inconveniences encountered over the preceding 12 months. The initial seven questions were centred on instances of exposure to specific situations, such as challenges arising from social obligations like associations and organizations. The remaining three inquiries pertained to contradictions or conflicts manifesting within their personal lives, encompassing interactions with close individuals, including family, household members, friends, and partners. Responses to the questionnaire were registered on a 0-4 Likert scale, offering a rating spectrum from 'not at all' to 'very much.'

Positive Mental Health Scale

Positive mental health was assessed using the Positive Mental Health Scale (PMHS), as developed by Lukat et al. in 2016. Participants were given explicit instructions to evaluate the veracity of nine statements, rating their agreement with each (e.g., "I am often carefree and in good spirits."). Responses to the questionnaire were recorded using a 1-4 Likert scale, spanning from 'not true' to 'true.' It's worth noting that the questionnaire comprised a blend of items, including one original question, five questions sourced from the Trierer Personality Inventory (Becker, 1989), one question from the Freiburg Personality Inventory (Fahrenberg et al., 1989), and two questions from the Mental Health Scale (Tönnies et al., 1996).

Procedure

The survey was designed and hosted online through the Qualtrics platform (Qualtrics.com). A dedicated survey link was generated and made accessible for participants to provide their responses. With ethical approval from the University of Chichester’s Ethical Committee, the study began distribution, facilitated via the research participation scheme administered by the lead university. An email notification was dispatched to students, alerting them to the study's availability. This scheme maintains a listing of available studies and offers students' academic credit essential for the completion of their respective modules. The survey was openly available for all students, accessible through a link that directed them to the survey. Students participating through the research participation scheme were required to log in to the university's Moodle platform and schedule a time slot for their participation. In addition to the university's research participation scheme, the survey was also shared within the university's esports society's Discord server. Upon accessing the survey via the provided link or QR code, participants were first presented with an information sheet containing contact details, along with a query seeking their consent to participate in the study. Subsequently, participants were

directed to respond to demographic questions and then proceed to address the questionnaire items in the sequential order provided. Upon completing the survey, participants received a debriefing statement and confirmation that their responses had been successfully submitted. The survey typically required approximately 15 minutes to complete. The data was anonymous and not traceable to individuals except for in the case of students needing credit for the research participation scheme, in which student numbers were collected. All data was stored online, securely, and only available to the authors of this paper.

Statistical Analysis

Following the completion of the survey by participants, data was analysed using the freely accessible statistical software, JASP (version 0.12.2). Each observed variable's data was subjected to univariate normality screening. Examination of boxplots revealed the absence of significant outliers, while the residuals displayed an approximately normal distribution, as validated by the Shapiro-Wilk test and skew and kurtosis Z-scores falling within the +/- 1.96 range. To investigate the disparities in everyday stress, perceived stress, and positive mental health among the video game genres—horror, competitive shooter, and sandbox—a one-by-three between-subjects ANOVA test was executed for each of the three dependent variables. In cases involving multiple comparisons, a Bonferroni adjustment was applied. Descriptive information of variables by genre can be found under appendix A. The alpha level (p) for statistical significance was set at .05 and partial eta squared ($\eta p2$) was used to measure effect size for all ANOVA analyses with Cohen's d used for pairwise comparisons.

Results

Perceived Stress

A statistically significant main effect emerged in the context of perceived stress levels across various genre groups ($F(2, 51) = 4.334$, $p = .018$, $\eta p^2 = .145$). To provide a more in-depth analysis of this main effect related to perceived stress, a series of Bonferroni post hoc tests was conducted. The results of these post hoc tests revealed that competitive shooter gamers ($M = 23.941$, $SD = 7.11$) exhibited significantly higher levels of perceived stress when compared to sandbox gamers ($M = 18.074$, $SD = 6.439$, $p = .015$, $d = .908$). Conversely, there were no statistically significant differences found between horror gamers ($M = 20.900$, $SD = 5.174$) and competitive shooter gamers ($p = .729$, $d = -.471$), as well as between horror gamers and sandbox gamers ($p = .728$, $d = .438$).

Everyday Stress

A substantial main effect was observed concerning levels of everyday stress among different genre groups ($F(2, 51) = 20.073$, $p < .001$, $\eta p^2 = .44$). To further elucidate this main effect of everyday stress within each genre, Bonferroni post hoc tests were conducted. The results of the post hoc tests indicated that horror gamers ($M = 13.1$, $SD = 7.866$) exhibited notably lower levels of everyday stress when compared to competitive shooter gamers ($M = 23.941$, $SD = 4.841$, $p < .001$, $d = -1.715$). Conversely, competitive shooter gamers displayed significantly higher levels of everyday stress in comparison to sandbox gamers ($M = 11.926$, $SD = 6.522$, $p < .001$, $d = 1.901$). No statistically significant difference was found between horror gamers and sandbox gamers ($p = 1.00$, $d = .186$).

Positive Mental Health

No statistically significant main effects were observed between levels of positive mental health and genre groups ($F(2, 51) = .983$, $p = .381$, $\eta_p^2 = .037$).

Correlations

Correlational analyses unveiled meaningful associations within the dataset. Specifically, perceived stress exhibited a positive correlation with everyday stress ($r = .411$, $p = .002$), indicating that as perceived stress levels increased, everyday stress levels also tended to rise. Conversely, a negative correlation was observed between perceived stress and positive mental health ($r = -.442$, $p < .001$), highlighting that as perceived stress increased, positive mental health tended to decrease. It is noteworthy that no significant correlations were identified between positive mental health and everyday stress ($r = -.096$, $p = .491$), signifying that these two variables displayed limited interdependence within the context of the study.

Discussion

This study aimed to investigate potential disparities in perceived stress, everyday stress, and positive mental health across video game genres, guided by prior literature (e.g., Graja et al., 2021; Smith et al., 2022). Notably, competitive shooter gamers exhibited the highest perceived and everyday stress levels, while sandbox gamers showed the lowest. Across all genre groups, perceived stress consistently fell within the 'moderate stress' range (14-26), suggesting moderate stress levels across genres. Interestingly, no statistically significant differences were found in positive mental health among genre groups, indicating relative consistency. These results suggest a potential association between competitive shooter games and heightened stress levels or a predisposition of individuals with higher stress levels to engage in this genre. Regarding positive mental health, individuals may select genres aligning with personal preferences. Further research is needed to comprehensively understand the intricate relationship between video game genres, stress, and positive mental health. Before discussing our findings further, it's important to mention that our study was exploratory. This means that the links we present to our findings and their implications are tentative. However, we hope that our discussion sparks new conversations among researchers and highlights clear gaps in the existing video game literature.

Perceived and Everyday Stress

The interpretation of results in the study delves into the intricacies of individual psychology when it comes to choosing video game genres, shedding light on the complexity of stress and enjoyment experiences. Notably, horror games, commonly perceived as stress-inducing, surprisingly exhibit lower stress levels than competitive shooter games, challenging initial expectations. Oosterwijk et al.'s (2017) research suggests a unique psychological disposition in horror gamers, driven by an intrigue in morbid images. Additionally, Scrivner and Christensen's (2021) findings indicate the development of resilience in horror gamers, potentially contributing to their lower stress levels compared to competitive shooter gamers. The consistent preference for horror games within this group suggests a cultivated resilience that might explain their reduced stress levels. In contrast, competitive shooter games align with the anticipated higher stress levels, supported by our findings and Pichon et al.'s (2020) correlation between action gaming and a competitive personality. The real-time nature of competitive shooters resonates with Bogoyavlenskaya and Klyueva's (2012) characteristic trait of unwavering focus, possibly influencing everyday stress levels beyond the gaming

environment. This implies that a considerable proportion of competitive shooter gamers may exhibit competitive traits extending beyond gaming, potentially impacting their overall stress levels. Given that competitive shooter gamers exhibit the highest stress levels, it suggests that individuals seeking stress mitigation may find it beneficial to explore alternative video game genres with lower stress levels, such as sandbox games. The therapeutic potential of sandbox games in alleviating perceived stress is plausible, yet detailed exploration has yet to be explored directly. While the study doesn't identify significant positive mental health changes among genres, the observed variations in stress levels align with Russoniello et al.'s (2009) research indicating mood enhancement and stress reduction with casual video games. This underscores the potential therapeutic role of sandbox games, surpassing horror or competitive shooter games. The unique feature of creative expression and release in sandbox games enhances their potential for stress relief in therapeutic contexts.

Further, sandbox games, known for their freedom (Ocio and Brugos, 2009), offer escapism, valuable in therapy for redirecting focus from negative emotions (Pearce et al., 2022). Research highlights the stress-alleviating effects of casual games like Animal Crossing: New Horizons during the COVID-19 pandemic (Pearce et al., 2022). However, caution is advised based on Plante et al.'s (2019) research connecting video games as a stress coping mechanism to video game addiction. Therapeutic use requires vigilant monitoring. While sandbox games provide a relaxed experience, Larche et al. (2021) suggest immersive games, like role-playing games, induce a flow state, offering deep concentration and altered perception of time (Csíkszentmihályi and Csíkszentmihályi, 1990). Future research could explore the individual or combined benefits of sandbox and role-playing games in therapeutic contexts, enhancing our understanding of their potential for well-being.

Positive Mental Health

The study's exploration into positive mental health levels across various video game genres revealed no statistically significant differences, seemingly contradicting the expected diverse emotional experiences offered by each genre. This discrepancy suggests that players may prioritize individual happiness over inherent stress levels when choosing games, granting them autonomy to select entertainment aligning with their preferences. While not the most effective approach for stress mitigation, this underscores the importance of providing choices between enjoyment and relaxation in the realm of video games. Individuals play a pivotal role in determining which factors best align with their lifestyle and preferences, pointing towards the constructive implication of exploring a broader array of video game genres. In examining

the stress levels of sandbox gamers, despite their low everyday and perceived stress levels, no significant difference was found when compared to horror gamers. Both groups maintained a 'moderate stress' classification according to the Perceived Stress Scale, partially aligning with prior research on sandbox games offering lower stress experiences, although the distinction is not substantial. The presence of university students in the sample introduces a potential confounding variable due to academic workloads, impacting stress levels across genres. This raises the possibility of a ceiling effect, inflating scores beyond the typical range, and warrants careful consideration in interpreting the results (Heiman, 2003; Hetsroni, 2014). Additionally, stress in sandbox games may also arise from personal factors, such as social anxiety, given the social interactions in games like Grand Theft Auto V and Minecraft (Beale et al., 2016). The study underscores the intricate interplay of video game genres, individual traits, and context in understanding stress and enjoyment effects, emphasizing the need for a nuanced approach to interpreting the findings (Heiman, 2003; Hetsroni, 2014; Beale et al., 2016).

Strengths, Limitations and Future Direction

The utilized questionnaires had been previously, favourably evaluated. The PSS-10 has been found to be the superior version of the PSS after analyzing the Internal consistency, reliability, factorial validity, and hypothesis validity of 19 articles (Lee, 2012). The BDSST has been perceived to possess internal consistency ranging from acceptable (.72, Germany) to good (.85, Pakistan; .87, China) in a multiplicity of countries and cultures by Bibi et al. (2021). Finally, the PMHS had its psychometric properties appraised over six studies, leading to the conclusion that it was an effective and reliable way of testing positive mental health (Lukat et al., 2016). The measures' natures permitted for acclimatization to an online format, and the lengths qualified the study to be advertised as lasting 15 minutes, aspects posited to entice time-constrained students.

The selection of the three video game genres for this study was guided by the hypothesized variations in stress levels and their potential impact on positive mental health. Subsequent iterations of this study may benefit from exploring additional video game genres, considering the vast array of options available. For instance, a replication of this study featuring different genres would offer valuable insights, and combining datasets from such diverse genre analyses could facilitate a broader examination of everyday stress, perceived stress, and positive mental health across a more extensive spectrum of genres, including racing, fighting, and adventure. Additionally, the present study inquired about the competitive aspect of gaming,

allowing for the comparison of casual players against competitive players. Extending this dataset with supplementary research could further enrich our understanding of the subject. Given the correlational nature of this study, a more in-depth investigation into these genres is required to ascertain the precise relationships between genre choice and the dependent variables.

Considering that the study aimed to gauge stress and positive mental health on a daily or general scale, a single laboratory-based study may not suffice. A more effective approach for further exploration of these variables would involve longitudinal research, potentially incorporating qualitative assessments and, in some cases, biometric measurements to monitor physical stress symptoms in a controlled laboratory setting. Alternatively, a more focused examination of specific genres may also yield valuable insights. For example, Andersen et al. (2020) explored the levels of fear and enjoyment in visitors of a haunted attraction, revealing a U-shaped relationship between fear and enjoyment. Replicating a similar study with horror video games, while conceptually intriguing, could face challenges related to temporal specificity and potential issues with temporal validity. Additionally, integrating introspective activities with horror games, as proposed by Scrivner et al. (2022), may offer a unique opportunity for individuals to gain self-awareness, a topic warranting further investigation. For example, a study by Hofer et al. (2017) suggests an exploration of the effects of first-person games versus third-person games on the player's experience of fear. A study encompassing these two gaming styles, while aligning with the variables of everyday stress, perceived stress, and positive mental health, may be limited due to the rarity of exclusive first-person or third-person horror gamers. The study's previous suggestion to delve deeper into sandbox games, considering their potential use in therapeutic contexts, also warrants investigation. Scrivner and Christensen's proposal (2021) that horror media, including horror video games, may serve to alleviate anxiety and cultivate resilience underscores the therapeutic potential of this genre.

In the context of the burgeoning competitive gaming community, research delving into the psychology of gamers across diverse gaming levels holds promise. Esports is gaining popularity, with regular competitions taking place. Although the current study focused exclusively on competitive shooters, numerous genres could harbor competitive variations with varying degrees of competitiveness. Given that competitive shooter gamers displayed the highest levels of everyday and perceived stress, it is worthwhile to investigate other competitive genres. Smith et al. (2022) examined predictors of mental health issues in esports athletes and found significant correlations with stressors, sleep, burnout, and social phobia

anxiety. Employing a longitudinal methodology, as suggested by Smith et al., could be instrumental in establishing the relationship between these mental health predictors and other video game genres, such as horror and sandbox games.

The dual nature of sandbox games, which offers both creative and destructive experiences, presents an opportunity for research into how an individual's stress levels and positive mental health correlate with their behaviours and interactions within a community, such as a Minecraft server, with particular emphasis on the ethical boundaries of griefing, as discussed by Beale et al. (2016). Future research into sandbox games and casual video games, in general, may explore their impact on conditions such as depression, anxiety, autism, and stress-related medical disorders, as indicated by Russoniello et al. (2009). Likewise, as the questionnaires employed in this study extend beyond the realm of gaming, and although sandbox and competitive shooters are genres specific to gaming, horror, as a genre, transcends the gaming domain. Thus, the study's procedure can be adapted for a more extensive exploration of the horror genre and its potential associations with stress levels and positive mental health. A potential avenue for future research could be to assess the motivations driving gamers to choose genres, which may be related to the dependent variables of this study, as both happiness and stress relief are intrinsic motivations.

Conclusion

Given the widespread popularity of video games, understanding their impact is essential. This study delves into the differences between everyday stress, perceived stress, and positive mental health across three video game genres: horror, competitive shooters, and sandbox. Utilizing a survey-based approach, the results reveal distinctive variations in everyday and perceived stress levels across these genres. Notably, competitive shooter gamers experience higher stress levels, while sandbox gamers consistently report the lowest stress levels, aligning with prior research. However, no significant differences emerge in positive mental health across genres. These findings carry practical implications, providing guidance for individuals seeking a gaming experience aligned with a lower-stress lifestyle. Tentatively, the study underscores the potential therapeutic utility of sandbox games. Future research, encompassing a broader array of video game genres, is imperative for a comprehensive understanding of the psychological impact of video games.

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