

REVIEW

A mechanistic overview of gaming and mental health: towards bridging the gap between research and practice

Soumya Prakash Biswal

Department of Applied Science, Kalinga Institute of Industrial Technology University, Odisha, India

ABSTRACT

The complex relationship between gaming and mental health has gained significant attention, revealing a complex interplay of positive and negative impacts. This comprehensive review explores three fundamental mechanisms shaping this relationship: coping and escapism, psychological needs fulfillment, and obsessive engagement. These mechanisms interact with key moderators such as stress, social interaction anxiety, loneliness, psychological resilience, and gender, amplifying or mitigating gaming's effects on mental well-being. Our mechanistic evaluation proposes a collaborative and evidence-based framework that can be an essential therapeutic modality. Future research should target the development of an integrative framework based on mechanisms elucidated in this review that will allow practitioners to connect research with practice guide interventions by fostering partnerships with stakeholders, which include the gaming industry, educators, parents, and caregivers. The approach ensures responsible gaming practices and well-being tools are integrated, offering a balanced compass to navigate the complex dynamics of gaming and mental health in an ever-evolving landscape.

KEYWORDS

Mental health; Gaming; Coping; Psychological; Escapism; Social interaction, Anxiety

ARTICLE HISTORY

Received 20 September 2023; Revised 12 October 2023; Accepted 25 October 2023

Introduction

Gaming's intersection with mental health has emerged as an issue with far-reaching implications for individuals, communities, and society [1]. Video games have evolved beyond mere entertainment to offer immersive experiences that engage players on multiple cognitive, emotional, and social levels [2]. With their widespread appeal and transformative potential, understanding the intricate connection between gaming and mental health has become imperative [3]. While video games have demonstrated cognitive benefits by enhancing attention, spatial reasoning, and problem-solving skills [4], they also facilitate social interactions and community engagement, particularly relevant in addressing modern-day loneliness [5]. Moreover, gamification's successful application in education, health interventions, and cognitive training indicate gaming's potential to impact mental well-being positively [6,7]. However, with these benefits, concerns about negative consequences have also emerged. Excessive gaming has been associated with health issues like repetitive stress injuries, sleep disturbances, and addiction [8,9]. Moreover, the potential influence of violent content in games on aggression and emotional desensitization has prompted further investigation [10,11]. Gaming and mental health research presents an ideal opportunity to address concerns while capitalizing on its benefits [12-14]. An effective framework must encompass cognitive, emotional, social, physiological, and other dimensions to holistically assess how gaming impacts mental health [9-14]. This would enable evidence-based interventions to increase psychological well-being [9-14].

Within this context, a substantial research gap persists. While gaming and mental health have garnered significant attention, translating research findings into practical

applications for individuals, clinicians, educators, policymakers, and other stakeholders remains underdeveloped. An integrative framework is necessary to navigate the multidimensionality inherent in both gaming and mental health [15]. The development framework should harmonize the diverse psychological, social, cognitive, emotional, and physiological facets into a unified perspective, recognizing their intricate interplay [16]. However, this demands a greater understanding of the mechanism that interacts with mental health and gaming. The expansive nature of gaming, encompassing various genres, platforms, and motivations, necessitates a nuanced approach [3]. This complexity is reflected in how gaming engages participants on cognitive, emotional, and social planes, generating intricate interactions that impact mental health outcomes [3]. A comprehensive framework acknowledges these components and examines their contribution to well-being or potential harm. Furthermore, the effects of gaming on mental health are not dichotomous; they vary based on individual differences, game attributes, and broader life circumstances [17]. An integrative framework must accommodate this variability, recognizing how diverse factors interact from inherent gaming features to individual psychological and physiological responses to comprehend their combined impact on health outcomes [18]. Such an approach avoids oversimplification, allowing for a balanced perspective that acknowledges potential benefits and risks, aiding informed decision-making [19].

An integrative framework provides a pathway to bridge this gap between research and practical application. Integrating insights from diverse disciplines offers a

*Correspondence: Soumya Prakash Biswal, Department of Applied Science, Kalinga Institute of Industrial Technology University, 751024, Odisha, India, e-mail: biswalsoumya86@gmail.com

© 2023 Author(s). Published by Reseapro Journals. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

comprehensive roadmap for crafting evidence-based interventions, guidelines, and educational initiatives tailored to various age groups, gaming genres, player profiles, and life contexts [3]. This ensures interventions are tailored and effective within players' unique circumstances. This review aims to provide a clear mechanistic overview of different factors that interplay between gaming and mental health. The broader objective is to facilitate the necessary background knowledge for developing an integrated framework for researchers and practitioners in the mental health domain that will enable them to develop tailored interventions in a patient-centric environment. This review addresses a key challenge within gaming and mental health research - translating research findings into practical applications through a mechanistic overview. To do so, a thorough exploration of the multidimensional relationship between gaming and mental health across cognitive, emotional, social, physiological, and other factors is undertaken.

Methodology

This review employed a multidisciplinary approach to explore the complex relationship between gaming and mental health. An extensive literature review covered academic databases, journals, books, and reports until September 2023. Databases like Pubmed, PsycInfo, and Google Scholar were searched using key terms such as "gaming," "video games," and "mental health" to locate relevant articles, studies, and publications. Recent publications were selected to maintain the credibility and reliability of the study. The empirical data were carefully collected from academic research papers, clinical studies, industry reports, and government publications according to their relevance to our research objectives to compile an exhaustive dataset.

The data collected were organized and categorized according to distinct themes related to identified mechanisms (coping and escapism, psychological needs, obsessive engagement) and moderators (psychosocial vulnerabilities, psychological resilience, gender) for further analysis. Categorization also enabled structured and systematic analysis. A qualitative data analysis process was then used to explore multidimensional aspects of gaming-mental health relationships by focusing on patterns, trends, and inconsistencies within data to gain a deep understanding of how gaming impacts mental well-being.

Gaming Types and Mental Health

The intersection of gaming and mental health has recently gained substantial scholarly attention due to their inherent interconnectedness and dynamic characteristics [20]. "Gaming" encompasses various activities involving electronic games, varying from rudimentary mobile applications to intricate multiplayer virtual environments [21]. In contrast, "mental health" pertains to individuals' intricate emotional, psychological, and social well-being, encompassing their adeptness in navigating stressors, including interpersonal relationships and decision-making [22]. This convergence has engendered research endeavors to uncover potential synergies that can leverage gaming to enhance mental well-being. "Applied games" have become a salient focal point in this context. This categorization encompasses two primary subdomains: serious games and gamification [23]. Serious games denote digital applications that fulfill precise

educational, training, or health-improvement objectives. These applications harness the immersive and interactive facets inherent to gaming, repurposing them as a medium for achieving specific outcomes [24]. Conversely, gamification entails infusing game-related elements and mechanics into non-gaming contexts, harnessing gaming's inherent allure to foster engagement and motivation for endeavors beyond mere amusement [25]. The intricate interplay between gaming and mental health is emphasized by their capacity to exert positive influences across mental well-being dimensions [26]. Applied games offer a conduit to extend online interventions to individuals who might otherwise manifest reluctance to engage with conventional mental health resources. This utilization leverages the pervasive popularity of gaming to bridge potential gaps between those necessitating support and the available services [27]. Furthermore, applied games leverage the captivating nature of gaming experiences, employing dynamics such as goal attainment, competition, and reward systems to bolster user motivation and mitigate attrition rates in online interventions [28,29]. These motivational facets are particularly pivotal for sustaining engagement within mental health interventions [30].

Applied games also provide a robust platform for therapeutic evolution. Their adaptable mechanisms facilitate behavior modification, cognitive restructuring, and emotional regulation. Immersion within virtual or augmented reality environments can engender flow states, fostering complete concentration on task completion [31]. Applied games facilitate experiential learning through iterative practice, behavioral emulation, and social interaction, empowering individuals to cultivate and consolidate new skills within a controlled environment [32]. The landscape of mental health-oriented gaming encompasses diverse categories that manifest the breadth of approaches available [33]. These classifications encompass exergames predicated on physical activity, virtual reality games, games rooted in cognitive behavioral therapy principles, entertainment-focused games, biofeedback-based games, and cognitive training games. Each category employs distinct mechanisms tailored to address mental health concerns while accommodating diverse preferences, needs, and demographic prerequisites [33]. However, despite the potential benefits of applied games, significant challenges exist in their practical implementation [34]. Similar to emerging fields, the foundation of evidence regarding interventions based on both gaming and non-gaming approaches is still evolving. Due to the dynamic nature of this field, researchers and developers must adapt quickly to changing technology platforms and shifts in user preferences.

Positive and Negative Effects of Gaming on Mental Health

Gaming and mental health have recently garnered significant attention among researchers, practitioners, and the general public. Gaming's effect on mental health outcomes can be complex and multidimensional depending on various factors like game type played, amount of time spent gaming, individual characteristics, etc. [35]. This article investigates gaming's dual nature by exploring its advantages and risks to provide insight into its interdependent relationship between playing video games and mental well-being.

Positive effects

Improved cognitive skills

Certain games emphasizing strategic thinking, problem-solving, and decision-making can help develop cognitive abilities. These games require quick thinking, spatial awareness, adaptability, and quick responses from players as they adapt quickly to unfamiliar environments - helping develop mental agility and critical thinking abilities while increasing mental agility and mental agility in players alike [36]. Complex tasks enhance brain power, improving attention, memory recall, and spatial reasoning skills [36,37].

Stress relief and relaxation

Gaming can offer individuals an escape from real-world stressors and help to provide temporary relaxation and stress relief. Immersing oneself in an engaging game world may offer respite from daily pressures while stimulating dopamine release - a neurotransmitter associated with pleasure and reward - leading to feelings of happiness and contentment [38].

Social connection and support

Multiplayer online games and virtual worlds offer spaces for social engagement, particularly among those who struggle with face-to-face communication [39]. Players can form friendships, collaborate on tasks, and work towards common goals creating a sense of belonging and community for those experiencing loneliness and isolation. Gaming may offer an effective building of new social relationships [40].

Negative effects

Excessive gaming and addiction

While moderate gaming may bring positive health outcomes, excessive gaming has been linked with negative mental health outcomes. Video game addiction, or internet gaming disorder, is characterized by compulsive gaming behavior, including preoccupation with gaming, withdrawal symptoms when not gaming, and neglect of other important life activities such as work and family commitments [41]. Excessive gaming can result in neglected responsibilities, strained relationships, and decreased mental well-being - potentially having serious repercussions for all involved parties [42]. Social Isolation and Loneliness: While gaming may foster social connections, excessive playing hours can also contribute to isolation from real-world relationships, reduced face-to-face interactions and feelings of loneliness, and worsening mental health issues [43].

Negative impact on sleep

Gaming late at night can devastate one's ability to restful slumber, interfering with your natural sleep-wake cycle and leading to deprivation. Poor rest has serious repercussions for mental health: mood disturbances, reduced cognitive functioning, and elevated stress levels may all result from insufficient slumber [44,45].

Aggression and desensitization

Video games that contain violent or aggressive content have generated considerable debate regarding their potential effects on behavior; prompting research that suggests such exposure may increase aggression, desensitize users to violence, and reduce empathy levels - potentially having serious ramifications on mental health by contributing to aggressive tendencies or negative emotional outcomes [46-48].

Mechanisms and Moderators in Gaming and Mental Health

The intricate interplay between gaming and mental health is underpinned by a multi-faceted interconnection of mechanisms and moderators, necessitating a comprehensive exploration. The conceptual framework that underscores the gaming-mental health relationship is central to this understanding.

Mechanisms

The coping and escapism mechanism elucidates how individuals frequently turn to gaming to seek temporary solace from stress, loneliness, or negative emotions. Gaming operates as a coping strategy, relieving real-world pressures and emotional regulation, thus offering a brief respite. Simultaneously, gaming's allure of escapism enables individuals to detach momentarily from the challenges of reality by immersing themselves in virtual realms. However, the outcomes of this mechanism are two-fold. On one hand, it can yield positive effects, such as alleviating stress and fostering a sense of achievement through in-game goals. Conversely, excessive engagement with gaming due to escapism may lead to neglect of real-life responsibilities and heightened stress levels [49-53].

The psychological needs mechanism delineates how gaming serves to address diverse psychological needs. These encompass the pursuit of achievement, social interaction, and emotional immersion. In this context, gaming offers a platform for individuals to seek accomplishment and mastery, thereby enhancing self-esteem. Moreover, the interactive nature of gaming facilitates social connections, serving as a realm for relationships and engagement. Additionally, the immersive nature of gaming experiences draws individuals into emotional involvement. The outcomes of this mechanism can be advantageous, leading to heightened self-esteem, improved social bonds, and amplified emotional engagement. However, an excessive focus on achievement might overshadow real-world relationships [54-58].

The obsessive engagement mechanism is characterized by compulsive and pressured behavior surrounding gaming. Individuals engrossed in this mechanism exhibit excessive and compulsive gaming driven by internal and external pressures. The outcomes of this mechanism primarily lean towards negative consequences. They encompass the neglect of other life domains, increased stress levels, compromised overall well-being, and the potential development of gaming disorder [59-61].

Moderators

The role of the Psychosocial Vulnerabilities Moderator comes to the fore in shaping the relationship between gaming behaviors and mental health outcomes. Stress, social interaction anxiety, and loneliness emerge as psychosocial vulnerabilities that can intensify this interplay. Elevated stress levels amplify the impact of gaming behaviors on mental well-being. Moreover, individuals with pronounced social interaction anxiety may experience distinct effects related to gaming behaviors, distinct from those with lower anxiety levels. Loneliness also interacts with gaming behaviors to influence mental health outcomes, with high levels of loneliness potentially exacerbating the effects of gaming on mental well-being. These interactions accentuate the importance of these psychosocial vulnerabilities in the

gaming-mental health nexus [62-70].

The Psychological Resilience Moderator protects against the detrimental effects of stress and negative outcomes associated with gaming behaviors. Individuals with greater psychological resilience can adeptly cope with stressors, potentially mitigating the adverse consequences of excessive gaming. This interaction underscores the significance of psychological resilience in moderating the link between gaming behaviors and mental health outcomes [71-73].

Lastly, the Gender Moderator pertains to the influence of gender on the relationship between fear of missing out (FoMO), impulsivity, and gaming disorder. Gender-related disparities impact coping strategies, motivations, and susceptibility to gaming-related issues. Moreover, the association between impulsivity and gaming disorder may manifest gender-related variations, with the potential for a more pronounced correlation

among males. This interaction highlights the gender dimension in shaping the intricate gaming-mental health dynamic [74-77].

Integration of mechanisms and moderators

This conceptual framework integrates the coping and escapism mechanisms, psychological needs, and obsessive engagement with the moderating effects of psychosocial vulnerabilities, psychological resilience, and gender. These mechanisms and moderators collectively shape the relationship between gaming behaviors and mental health outcomes. The interplay between coping strategies, motivations, engagement types, psychosocial factors, and individual characteristics highlights the complexity of this relationship (Figure 1). Effective prevention and intervention strategies must consider these mechanisms and moderators to promote healthier gaming behaviors and protect mental well-being [78].

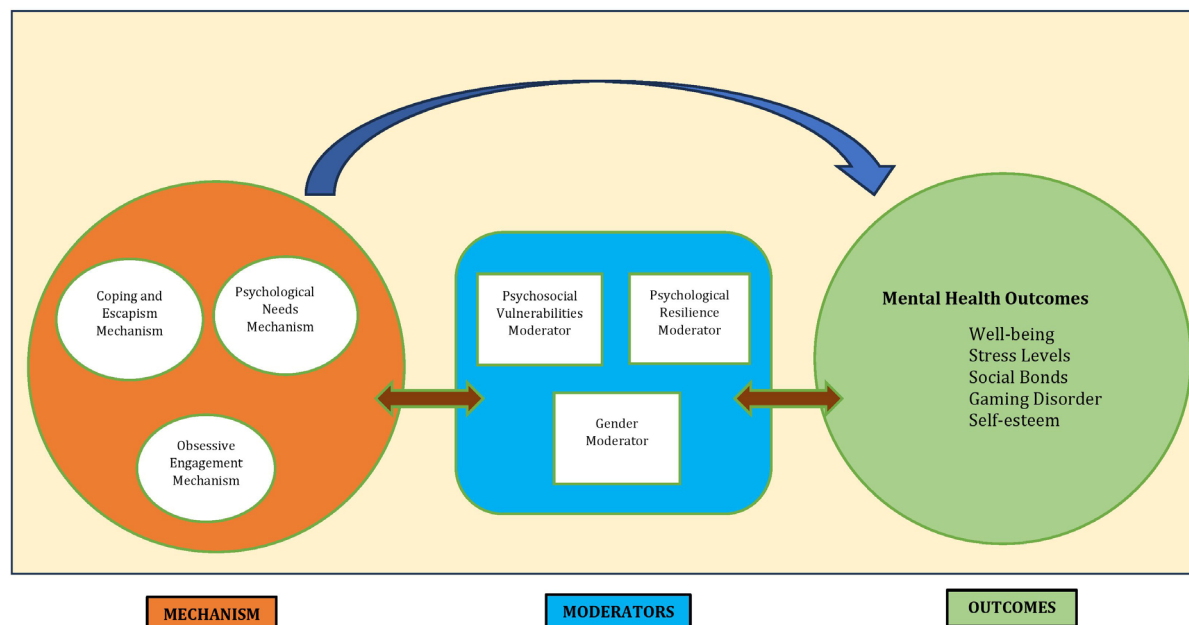


Figure 1. A simple conceptual framework of the relationship between gaming behaviors and mental health.

Gaming-mental health relationships are complex. Coping strategies, psychological needs, and engagement types all play an essential part in shaping how gaming impacts mental health outcomes; psychosocial vulnerabilities such as psychological resilience motivations and gender also play a part in complicating this relationship [79]. Therefore, understanding these mechanisms and moderators is paramount to crafting effective prevention and intervention strategies to encourage healthy gaming behavior while safeguarding mental well-being

Challenges and Opportunities in Addressing Excessive Gaming and Mental Health

The relationship between excessive gaming and mental health is complex and multidimensional, posing opportunities and challenges for researchers, practitioners, and stakeholders [80]. At the same time, excessive gaming has become more evident as having detrimental effects on mental well-being than beneficial gaming features creating difficulties for counselors and

psychiatrists who seek to provide effective guidance for individuals struggling with gaming-related issues [81].

Balancing harmful and beneficial effects

Walking the line between acknowledging the potentially negative consequences of excessive gaming on mental health while acknowledging its benefits can be tricky [82]. A key challenge is identifying the boundary between harmless entertainment and problematic behavior. This gray area makes practitioners' jobs even harder, leaving them to make subjective judgment calls rather than clear criteria for intervention [83]. Furthermore, something that might seem problematic to one individual could be within normative limits for another, making standardized approaches harder to develop.

Lack of consensus on diagnostic criteria

The lack of consensus surrounding gaming disorder diagnostic criteria reflects mental health professionals' difficulty in

dealing with new and technological-related issues [84]. With clear criteria, practitioners find it easier to identify problematic gaming behaviors from casual engagement consistently. Without defined standards for diagnosing and treating gaming-related concerns, it remains subjective, potentially leading to differing approaches among practitioners [85]. This issue calls for further research and collaborative efforts among providers to establish universally accepted guidelines.

Evolving gaming landscape

The rapid evolution of the gaming industry adds a layer of complexity to the issue. With new platforms, technologies, and games constantly emerging, practitioners are in a perpetual game of catch-up. This dynamic landscape means that today's research could be outdated quickly, rendering its relevance questionable [86]. The challenge here is to keep up with these rapid changes and predict the potential impacts of gaming experiences that still need to be conceptualized. This calls for flexible and adaptive approaches to research and intervention [87,88].

Stigma and misunderstanding

While acknowledging the stigma associated with excessive gaming is important, it is also necessary to recognize that not all stigmas are unwarranted. The challenge here is distinguishing between legitimate concerns and exaggerated fears [89]. Misunderstandings about the positive aspects of gaming may contribute to oversimplification, yet it is essential not to minimize its potential harm. The real challenge is finding an acceptable middle ground where gaming-related concerns are taken seriously without demonizing gaming. Achieving this balance requires open dialogue, accurate information dissemination, and collaboration between the gaming industry and mental health professionals [90,91].

Opportunities

Holistic understanding

While the call for a holistic understanding is admirable, the challenge lies in effectively operationalizing and integrating these multi-faceted factors into practical interventions [92]. Determining which factors are the most significant for each individual and understanding how they interact is complex and time-consuming. It demands a comprehensive assessment process that might only sometimes be feasible within the constraints of typical counselling sessions [93]. Additionally, the practical implementation of such tailored interventions on a large scale poses logistical challenges, potentially limiting their widespread application.

Incorporating positive psychology

Incorporating positive psychology into counseling approaches is promising but must be executed cautiously. Emphasizing the potential benefits of gaming could inadvertently downplay the very real risks associated with excessive gaming [94]. Striking a balance between promoting positive aspects and addressing negative consequences is a delicate task that requires careful communication [95]. Overselling the therapeutic benefits of gaming could lead to complacency or a lack of urgency in dealing with problematic behaviors.

Customized interventions

Leveraging gaming technologies for mental health support presents exciting possibilities. However, there is a need to

scrutinize the efficacy of such interventions rigorously [96]. While combining enjoyment with therapeutic outcomes is appealing, it requires empirical evidence to demonstrate its effectiveness. Furthermore, using gaming for intervention could raise ethical concerns about potentially exploiting vulnerable individuals who seek relief from gaming [97].

Education and prevention

Educational efforts aimed at parents, caregivers, educators, and gamers are undoubtedly valuable. However, these efforts need to be rooted in accurate and up-to-date information. As the gaming landscape evolves rapidly, outdated advice might inadvertently contribute to misunderstandings [98]. Additionally, addressing excessive gaming solely from an educational perspective might neglect the complexities of underlying psychological factors that drive problematic behaviors.

Integrating resilience-building

Focusing on building psychological resilience in individuals susceptible to gaming-related stressors is a double-edged sword. While empowering individuals with coping skills is essential, this approach could inadvertently shift the responsibility onto the individual, overlooking broader systemic issues. Relying solely on resilience-building might underestimate the significance of external factors such as social support, family dynamics, and peer influences [99].

Collaboration with the gaming industry

Collaboration with the gaming industry holds potential but raises concerns about conflicts of interest. The billion-dollar gaming industry might prioritize profits over user well-being, potentially undermining the credibility and effectiveness of any industry-led initiatives. Striking a balance between responsible gaming practices and industry interests is challenging. Ensuring that the primary goal remains the well-being of gamers, especially children and adolescents, is vital [99].

Navigating the Complexity of Gaming and Mental Health: Collaborative Strategies

The interaction between gaming and mental health is intricate, demanding a comprehensive exploration of its mechanisms. Integrating research, practice, and industry can offer a balanced approach to tackle challenges linked to excessive gaming and mental well-being. In this scenario, the relationship between gaming and mental health unfolds a multi-faceted narrative where various mechanisms and moderators converge. The Compensatory Model of Media Use emerges, underlining gaming as a coping mechanism amid life's challenges. Stress, social interaction anxiety, and loneliness amplify gaming's impact on mental health. However, inconsistencies arise, showcasing positive and negative outcomes [100-104].

Amid these shifts, substantial opportunities come to light. Tailored interventions, merging technology with therapeutic objectives, step into focus. Education and prevention become integral, propelled by collaborations between practitioners and caregivers. Providing individuals with knowledge about healthy gaming habits, recognizing warning signs and fostering resilience guide a mindful approach to navigating the gaming landscape [105,106]. Still, addressing the intricacies and challenges of this journey is challenging. Acknowledging

the gaming industry's positives while addressing potential pitfalls becomes crucial. The absence of diagnostic consensus complicates identifying problematic gaming behaviors. Rapid technology evolution outpaces adaptation, and stigma persists, hindering support-seeking [107,108].

During these challenges, collaborative solutions emerge as a focal point. A partnership between the counseling and gaming industries surfaces, promoting responsible gaming practices, parental controls, and tools for positive behavior. This reframing presents gaming as both a challenge and a solution. The interplay of psychosocial factors and gaming behaviors assumes importance, emphasizing the nuances within this relationship [109,110]. An integrative framework is imperative to address these intricacies, bridging research and practice in gaming's impact on mental health. The holistic nature of this relationship demands a comprehensive approach. Research findings oscillate between positive and negative outcomes, highlighting the need for an encompassing framework for effective interventions. This framework should encompass therapeutic potential, risks, and personalized strategies aligned with tailored interventions [111-113].

As the gaming landscape evolves rapidly, this framework becomes invaluable. Practitioners remain adaptable and relevant by grounding interventions in a deep understanding of gaming intricacies and their interplay with mental health. This adaptability ensures that interventions effectively address current challenges and prepare individuals for upcoming shifts [114,115]. Importantly, the framework's impact extends beyond counseling involving external stakeholders. Collaborations with the gaming industry, educators, parents, and caregivers establish a holistic approach. Leveraging diverse expertise, these alliances co-create responsible gaming practices and tools for well-being within the gaming community [116,117]. The call for an integrative framework underscores the need for synergy between research and practice. This evidence-based, adaptable framework guides practitioners through the intricate relationship between gaming and mental health. It weaves together research insights, therapeutic expertise, collaboration, and adaptability. As understanding of gaming's impact advances, this holistic approach is a compass for navigating a balanced trajectory [118,119].

Main Findings and Implications

Empirical research reveals the intricate connection between gaming and mental health, highlighting a complex interplay of positive and negative influences [120-124]. Through thorough analysis, three fundamental mechanisms emerge as foundational factors. First, coping and escapism mechanisms indicate individuals' tendency to use gaming as a stress-coping strategy, offering momentary relief from real-life pressures and a sense of achievement [125]. Second, the psychological needs mechanism underscores gaming's role in fulfilling psychological needs like achievement, social interaction, and immersive experiences, impacting mental health trajectories [126]. Third, the obsessive engagement mechanism emphasizes compulsive gaming's substantial contribution to mental health, characterized by excessive and compulsive gaming behaviors [127]. Furthermore, the identification of moderators accentuates the intricate interplay between gaming behaviors and mental well-being [128,129]. Stress, social interaction anxiety, and loneliness amplify the effects of gaming behaviors on mental health outcomes, while psychological resilience

buffers against gaming-related stressors. Gender moderates the connection between impulsivity and gaming disorder, revealing gender-based disparities in susceptibility to gaming-related issues [130]. The implications of these findings are profound and varied [131]. Acknowledging the dual outcomes of gaming on mental health is essential for a balanced perspective. Practitioners, researchers, and stakeholders should consider therapeutic benefits and potential drawbacks when designing interventions [46]. This approach calls for a comprehensive assessment of individuals' gaming habits, motivations, and vulnerabilities, leading to tailored interventions that promote well-being and responsible gaming practices [132].

Conclusions

In conclusion, the dynamic relationship between gaming and mental health is a multi-faceted journey that demands a comprehensive and balanced approach. Empirical research underscores the intricate interplay between positive and negative influences resulting from gaming behaviors. Coping and escapism mechanisms offer temporary relief from real-world stressors, while psychological needs mechanisms fulfill achievement and social interaction desires, and obsessive engagement mechanisms highlight the role of excessive gaming in mental health. Moderators, such as psychosocial vulnerabilities, psychological resilience, and gender, further complicate this intricate interplay, amplifying or mitigating the impact of gaming on mental well-being.

These insights carry profound implications for practice, urging a holistic perspective that acknowledges both the therapeutic benefits and potential risks of gaming. A collaborative and evidence-based framework emerges as an essential tool to navigate this complexity, bridging research and practice. By fostering alliances with stakeholders, such as the gaming industry, educators, parents, and caregivers, this framework ensures that responsible gaming practices and tools for well-being are integrated into the gaming community. It is a compass that guides practitioners through the ever-evolving gaming landscape, enabling them to craft tailored interventions that promote psychological well-being. As the gaming landscape continues to evolve, this framework remains adaptable and relevant, contributing to the well-being of individuals, communities, and society.

Disclosure statement

No potential conflict of interest was reported by the author.

References

1. Kowal M, Conroy E, Ramsbottom N, Smithies T, Toth A, Campbell M. Gaming Your Mental Health: A Narrative Review on Mitigating Symptoms of Depression and Anxiety Using Commercial Video Games. *JMIR Serious Games*. 2021;9(2):e26575.
2. Phan O, Prieur C, Bonnaire C, Obradovic I. Internet Gaming Disorder: Exploring Its Impact on Satisfaction in Life in PELLEAS Adolescent Sample. *Int J Environ Res Public Health*. 2019;17(1):3.
3. Von der Heiden JM, Braun B, Müller KW, Egloff B. The association between video gaming and psychological functioning. *Front Psychol*. 2019;10:1731.
4. Boot WR, Kramer AF, Simons DJ, Fabiani M, Gratton G. The effects of video game playing on attention, memory, and executive control. *Acta Psychol (Amst)*. 2008;129(3):387-398.
5. Burke B, Lucier-Greer M. Comparing video game engagement measures as related to individual and relational well-being in a

- community sample of adult gamers. *Comput Hum Behav.* 2021;4:100136.
6. Cheng VWS. Recommendations for Implementing Gamification for Mental Health and Wellbeing. *Front Psychol.* 2020;11:586379.
7. Litvin S, Saunders R, Maier MA, Lüttke S. Gamification as an approach to improve resilience and reduce attrition in mobile mental health interventions: A randomized controlled trial. *PLoS One.* 2020;15(9):e0237220.
8. Peracchia S, Curcio G. Exposure to video games: effects on sleep and on post-sleep cognitive abilities. A systematic review of experimental evidences. *Sleep Sci.* 2018;11(4):302-314.
9. Shi J, Renwick R, Turner NE, Kirsh B. Understanding the lives of problem gamers: The meaning, purpose, and influences of video gaming. *Comput Hum Behav.* 2019;97:291-303.
10. Yin K, Zi Y, Zhuang W, Gao Y, Tong Y, Song L, et al. Linking Esports to health risks and benefits: Current knowledge and future research needs. *J Sport Health Sci.* 2020;9(6):485-488.
11. Shao R, Wang Y. The Relation of Violent Video Games to Adolescent Aggression: An Examination of Moderated Mediation Effect. *Front Psychol.* 2019;10:384.
12. Jones CM, Scholes L, Johnson D, Katsikitis M, Carras MC. Gaming well: links between videogames and flourishing mental health. *Front Psychol.* 2014;5:260.
13. Teng Z, Pontes HM, Nie Q, Xiang G, Griffiths MD, Guo C. Internet gaming disorder and psychosocial well-being: A longitudinal study of older-aged adolescents and emerging adults. *Addict Behav.* 2020;110:106530.
14. Kuss DJ. Internet gaming addiction: current perspectives. *Psychol Res Behav Manag.* 2013;6:125-137.
15. Siriaraya P, Visch V, Boffo M, Spijkerman R, Wiers R, Korrelboom K, et al. Game Design in Mental Health Care: Case Study-Based Framework for Integrating Game Design Into Therapeutic Content. *JMIR Serious Games.* 2021;9(4):e27953.
16. Schakel L, Veldhuijzen DS, van Middendorp H, Prins C, Drittij AMHF, Vrieling F, et al. An Internet-Based Psychological Intervention With a Serious Game to Improve Vitality, Psychological and Physical Condition, and Immune Function in Healthy Male Adults: Randomized Controlled Trial. *J Med Internet Res.* 2020;22(7):e14861.
17. Vuorre M, Johannes N, Magnusson K, Przybylski AK. Time spent playing video games is unlikely to impact well-being. *R Soc Open Sci.* 2022;9(7):220411.
18. Sailer M, Hense JU, Mayr SK, Mandl H. How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Comput Hum Behav.* 2017;69:371-380.
19. Pontes HM, Stavropoulos V, Griffiths MD. Emerging insights on internet gaming disorder: Conceptual and measurement issues. *Addict Behav Rep.* 2019;11:100242.
20. Johannes N, Vuorre M, Przybylski AK. Video game play is positively correlated with well-being. *R Soc Open Sci.* 2021;8(2):202049.
21. Stevens MW, Dorstyn D, Delfabbro PH, King DL. Global prevalence of gaming disorder: A systematic review and meta-analysis. *Aust N Z J Psychiatry.* 2021;55(6):553568.
22. Galderisi S, Heinz A, Kastrup M, Beezhold J, Sartorius N. Toward a new definition of mental health. *World Psychiatry.* 2015;14(2):231-233.
23. Vlachopoulos D, Makri A. The effect of games and simulations on higher education: a systematic literature review. *Int J Educ Technol High Educ.* 2017;14(1):1-33.
24. Fitzgerald M, Ratcliffe G. Serious Games, Gamification, and Serious Mental Illness: A Scoping Review. *Psychiatr Serv.* 2020;71(2):170-183.
25. Deterding S, Sicart M, Nacke L, O'Hara K, Dixon D. Gamification. using game-design elements in non-gaming contexts. InCHI'11 extended abstracts on human factors in computing systems. 2011;2425-2428.
26. Hazel J, Kim HM, Every-Palmer S. Exploring the possible mental health and wellbeing benefits of video games for adult players: A cross-sectional study. *Australas Psychiatry.* 2022;30(4):541-546.
27. Vajawat B, Varshney P, Banerjee D. Digital Gaming Interventions in Psychiatry: Evidence, Applications and Challenges. *Psychiatry Res.* 2021;295:113585.
28. Mandryk RL, Birk MV. Toward Game-Based Digital Mental Health Interventions: Player Habits and Preferences. *J Med Internet Res.* 2017;19(4):e128.
29. Fleming TM, Bavin L, Stasiak K, Hermansson-Webb E, Merry SN, Cheek C, et al. Serious Games and Gamification for Mental Health: Current Status and Promising Directions. *Front Psychiatry.* 2017;7:215.
30. Koivisto J, Hamari J. The rise of motivational information systems: A review of gamification research. *Int J Inf Manage.* 2019;45:191-210.
31. Bocci F, Ferrari A, Sarini M. Putting the Gaming Experience at the Center of the Therapy-The Video Game Therapy® Approach. *InHealthcare.* 2023;11(12):1767.
32. Plass JL, Homer BD, Kinzer CK. Foundations of game-based learning. *Educ Psychol.* 2015;50(4):258-283.
33. Fleming TM, Bavin L, Stasiak K, Hermansson-Webb E, Merry SN, Cheek C, et al. Serious Games and Gamification for Mental Health: Current Status and Promising Directions. *Front Psychiatry.* 2017;7:215.
34. Adipat S, Laksana K, Busayanon K, Asawasowan A, Adipat B. Engaging Students in the Learning Process with Game-Based Learning: The Fundamental Concepts. *Int J Educ Technol High Educ.* 2021;4(3):542-552.
35. Mehra I, Nasir S, Prakash A. Computer and Video Games in Mental Health. *Sci Insights.* 2023;42(4):877-883.
36. Reynaldo C, Christian R, Hosea H, Gunawan AA. Using video games to improve capabilities in decision making and cognitive skill: A literature review. *Procedia Comput Sci.* 2021;179:211-221.
37. Chaarani B, Ortigara J, Yuan D, Loso H, Potter A, Garavan HP. Association of Video Gaming With Cognitive Performance Among Children. *JAMA Netw Open.* 2022;5(10):e2235721.
38. Kühn S, Romanowski A, Schilling C, Lorenz R, Mörsen C, Seifert N, et al. The neural basis of video gaming. *Transl Psychiatry.* 2011;1(11):e53.
39. Heng S, Zhao H, Wang M. In-game Social Interaction and Gaming Disorder: A Perspective From Online Social Capital. *Front Psychiatry.* 2021;11:468115.
40. Eklund L, Johansson M. Played and designed sociality in a massive multiplayer online game. *Eludamos-Journal for Computer Game Culture.* 2013;7(1):35-54.
41. De Pasquale C, Sciacca F, Martinelli V, Chiappedi M, Dinaro C, Hichy Z. Relationship of Internet Gaming Disorder with Psychopathology and Social Adaptation in Italian Young Adults. *Int J Environ Res Public Health.* 2020;17(21):8201.
42. Schneider LA, King DL, Delfabbro PH. Family factors in adolescent problematic Internet gaming: A systematic review. *J Behav Addict.* 2017;6(3):321-333.
43. Pallavicini F, Pepe A, Mantovani F. The Effects of Playing Video Games on Stress, Anxiety, Depression, Loneliness, and Gaming Disorder During the Early Stages of the COVID-19 Pandemic: PRISMA Systematic Review. *Cyberpsychol Behav Soc Netw.* 2022;25(6):334-354.
44. Weaver E, Gradsar M, Dohnt H, Lovato N, Douglas P. The effect of presleep video-game playing on adolescent sleep. *J Clin Sleep Med.* 2010;6(2):184-189.
45. Ivarsson M, Anderson M, Åkerstedt T, Lindblad F. The effect of violent and nonviolent video games on heart rate variability, sleep, and emotions in adolescents with different violent gaming habits. *Psychosom Med.* 2013;75(4):390-396.
46. Przybylski AK, Weinstein N. Violent video game engagement is not associated with adolescents' aggressive behaviour: evidence from a registered report. *R Soc Open Sci.* 2019;6(2):171474.
47. Greitemeyer T. The contagious impact of playing violent video games on aggression: Longitudinal evidence. *Aggress Behav.* 2019;45(6):635-642.
48. Hollingdale J, Greitemeyer T. The effect of online violent video games on levels of aggression. *PLoS One.* 2014;9(11):e111790.

49. Melodia F, Canale N, Griffiths MD. The role of avoidance coping and escape motives in problematic online gaming: A systematic literature review. *Int J Ment Health Addict*. 2020;1-27.
50. Blasi MD, Giardina A, Giordano C, Coco GL, Tosto C, Billieux J, et al. Problematic video game use as an emotional coping strategy: Evidence from a sample of MMORPG gamers. *J Behav Addict*. 2019;8(1):25-34.
51. Wang H, Sun CT. Game reward systems: Gaming experiences and social meanings. InDiGRA conference 2011;114.
52. Wang X, Abdelhamid M, Sanders GL. Exploring the effects of psychological ownership, gaming motivations, and primary/secondary control on online game addiction. *Decis Support Syst*. 2021;144:113512.
53. Kaya A, Türk N, Batmaz H, Griffiths MD. Online Gaming Addiction and Basic Psychological Needs Among Adolescents: The Mediating Roles of Meaning in Life and Responsibility. *Int J Ment Health Addict*. 2023;1-25.
54. Bilgin CU, Baek Y, Park H. How debriefing strategies can improve student motivation and self-efficacy in game-based learning. *J Educ Comput Res*. 2015;53(2):155-182.
55. Uz C, Cagiltay K. Social Interactions and Games. *Digit Educ Rev*. 2015;27:1-2.
56. Nylund A, Landfors O. Frustration and its effect on immersion in games. Masters. Umea University. 2015.
57. Sun RQ, Sun GF, Ye JH. The effects of online game addiction on reduced academic achievement motivation among Chinese college students: the mediating role of learning engagement. *Front Psychol*. 2023;14:1185353.
58. Singh M. Compulsive Digital Gaming: An Emerging Mental Health Disorder in Children. *Indian J Pediatr*. 2019;86(2):171-173.
59. Wei L, Zhang S, Turel O, Bechara A, He Q. A Tripartite Neurocognitive Model of Internet Gaming Disorder. *Front Psychiatry*. 2017;8:285.
60. Rehbein F, Baier D. Family-, media-, and school-related risk factors of video game addiction. *J Media Psychol*. 2013;25(3).
61. Mohamed MS, Rukh G, Schiöth HB, Vadlin S, Olofsdotter S, Åslund C, et al. Worsened Anxiety and Loneliness Influenced Gaming and Gambling during the COVID-19 Pandemic. *J Clin Med*. 2022;12(1):249.
62. Aliyari H, Sahraei H, Daliri MR, Minaei-Bidgoli B, Kazemi M, Agaei H, et al. The beneficial or harmful effects of computer game stress on cognitive functions of players. *Basic Clin Neurosci*. 2018;9(3):177.
63. Marino C, Canale N, Vieno A, Caselli G, Scacchi L, Spada MM. Social anxiety and Internet gaming disorder: The role of motives and metacognitions. *J Behav Addict*. 2020;9(3):617-628.
64. Yen JY, Yen CF, Chen CS, Wang PW, Chang YH, Ko CH. Social anxiety in online and real-life interaction and their associated factors. *Cyberpsychol Behav Soc Netw*. 2012;15(1):7-12.
65. Rozgonjuk D, Pontes HM, Schivinski B, Montag C. Disordered gaming, loneliness, and family harmony in gamers before and during the COVID-19 pandemic. *Addict Behav Rep*. 2022;15:100426.
66. Porter AM, Goolkasian P. Video games and stress: How stress appraisals and game content affect cardiovascular and emotion outcomes. *Front Psychol*. 2019;10:967.
67. Gioia F, Colella GM, Boursier V. Evidence on problematic online gaming and social anxiety over the past ten years: A systematic literature review. *Curr Addict Rep*. 2022;1-6.
68. Wang P, Wang J, Yan Y, Si Y, Zhan X, Tian Y. Relationship between loneliness and depression among Chinese junior high school students: the serial mediating roles of internet gaming disorder, social network use, and generalized pathological internet use. *Front Psychol*. 2021;11:529665.
69. Wang JL, Sheng JR, Wang HZ. The association between mobile game addiction and depression, social anxiety, and loneliness. *Front Public Health*. 2019;7:247.
70. Canale N, Marino C, Griffiths MD, Scacchi L, Monaci MG, Vieno A. The association between problematic online gaming and perceived stress: The moderating effect of psychological resilience. *J Behav Addict*. 2019;8(1):174-180.
71. Yen JY, Lin HC, Chou WP, Liu TL, Ko CH. Associations among resilience, stress, depression, and internet gaming disorder in young adults. *Int J Environ Res Public Health*. 2019;16(17):3181.
72. Choi T, Park JW, Kim DJ. The effect of stress on internet game addiction trends in adults: Mindfulness and conscientiousness as mediators. *Psychiatry Investig*. 2021;18(8):779-788.
73. Li L, Griffiths MD, Mei S, Niu Z. The mediating role of impulsivity and the moderating role of gender between fear of missing out and gaming disorder among a sample of Chinese university students. *Cyberpsychol Behav Soc Netw*. 2021;24(8):550-557.
74. Dong G, Wang L, Du X, Potenza MN. Gender-related differences in neural responses to gaming cues before and after gaming: Implications for gender-specific vulnerabilities to Internet gaming disorder. *Soc Cogn Affect Neurosci*. 2018;13(11):1203-1214.
75. Ryu H, Lee JY, Choi A, Park S, Kim DJ, Choi JS. The Relationship between Impulsivity and Internet Gaming Disorder in Young Adults: Mediating Effects of Interpersonal Relationships and Depression. *Int J Environ Res Public Health*. 2018;15(3):458.
76. Su W, Király O, Demetrovics Z, Potenza MN. Gender Moderates the Partial Mediation of Impulsivity in the Relationship Between Psychiatric Distress and Problematic Online Gaming: Online Survey. *JMIR Ment Health*. 2019;6(3):e10784.
77. Király O, Koncz P, Griffiths MD, Demetrovics Z. Gaming disorder: A summary of its characteristics and aetiology. *Compr Psychiatry*. 2023;122:152376.
78. Plante CN, Gentile DA, Groves CL, Modlin A, Blanco-Herrera J. Video games as coping mechanisms in the etiology of video game addiction. *Psychol Pop Media Cult*. 2019;8(4):385.
79. Purwaningsih E, Nurmala I. The impact of online game addiction on adolescent mental health: A systematic review and meta-analysis. *Open Access Macedonian J Med Sci*. 2021;9(F):260-274.
80. Chen Y, Lu J, Wang L, Gao X. Effective interventions for gaming disorder: A systematic review of randomized control trials. *Front Psychiatry*. 2023;14:1098922.
81. Granic I, Lobel A, Engels RC. The benefits of playing video games. *Am Psychol*. 2014;69(1):66-78.
82. Lerner JS, Li Y, Valdesolo P, Kassam KS. Emotion and decision making. *Annu Rev Psychol*. 2015;66:799-823.
83. Wang Q, Ren H, Long J, Liu Y, Liu T. Research progress and debates on gaming disorder. *Gen Psychiatr*. 2019;32(3):e100071.
84. Griffiths MD, Kuss DJ, Lopez-Fernandez O, Pontes HM. Problematic gaming exists and is an example of disordered gaming. *J Behav Addict*. 2017;6(3):296-301.
85. Kelly S, Leung J. The New Frontier of Esports and Gaming: A Scoping Meta-Review of Health Impacts and Research Agenda. *Front Sports Act Living*. 2021;3:640362.
86. Chan G, Huo Y, Kelly S, Leung J, Tisdale C, Gullo M. The impact of eSports and online video gaming on lifestyle behaviours in youth: A systematic review. *Comput Hum Behav*. 2022;126:106974.
87. Ferguson CJ. Do Angry Birds Make for Angry Children? A Meta-Analysis of Video Game Influences on Children's and Adolescents' Aggression, Mental Health, Prosocial Behavior, and Academic Performance. *Perspect Psychol Sci*. 2015;10(5):646-666.
88. Ferrari M, McIlwaine SV, Jordan G, Shah JL, Lal S, Iyer SN. Gaming With Stigma: Analysis of Messages About Mental Illnesses in Video Games. *JMIR Ment Health*. 2019;6(5):e12418.
89. Galanis CR, Weber N, Delfabbro PH, Billieux J, King DL. Gaming disorder and stigma-related judgements of gaming individuals: An online randomized controlled trial. *Addiction*. 2023;118(9):1687-1698.
90. Anderson CA, Shibuya A, Ihori N, Swing EL, Bushman BJ, Sakamoto A, et al. Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. *Psychol Bull*. 2010;136(2):151-173.
91. Park JJ, Wilkinson-Meyers L, King DL, Rodda SN. Person-centred interventions for problem gaming: a stepped care approach. *BMC Public Health*. 2021;21(1):872.

92. Hartanto A, Lua VY, Quek FY, Yong JC, Ng MH. A critical review on the moderating role of contextual factors in the associations between video gaming and well-being. *Comput Hum Behav.* 2021;4:100135.
93. Ciarrochi J, Atkins PW, Hayes LL, Sahdra BK, Parker P. Contextual Positive Psychology: Policy Recommendations for Implementing Positive Psychology into Schools. *Front Psychol.* 2016;7:1561.
94. Gao XJ, Sun JJ, Xiang M. Positive psychological intervention for anxiety, depression and coping in subjects addicted to online games. *World J Clin Cases.* 2021;9(14):3287-3293.
95. Sardi L, Idri A, Fernández-Alemán JL. A systematic review of gamification in e-Health. *J Biomed Inform.* 2017;71:31-48.
96. Van der Lubbe LM, Gerritsen C, Klein MC, Hindriks KV. Empowering vulnerable target groups with serious games and gamification. *Entertain Comput.* 2021;38:100402.
97. Li Y, Xu Z, Hao Y, Xiao P, Liu J. Psychosocial impacts of mobile game on K12 students and trend exploration for future educational mobile games. *InFrontiers in Education.* 2022;7:843090.
98. Lin PC, Yen JY, Lin HC, Chou WP, Liu TL, Ko CH. Coping, Resilience, and Perceived Stress in Individuals with Internet Gaming Disorder in Taiwan. *Int J Environ Res Public Health.* 2021;18(4):1771.
99. Griffiths MD, Pontes HM. The future of gaming disorder research and player protection: what role should the video gaming industry and researchers play?. *Int J Ment Health Addict* 2020;18:784-790.
100. Clark LA, Cuthbert B, Lewis-Fernández R, Narrow WE, Reed GM. Three Approaches to Understanding and Classifying Mental Disorder: ICD-11, DSM-5, and the National Institute of Mental Health's Research Domain Criteria (RDoC). *Psychol Sci Public Interest.* 2017;18(2):72-145.
101. Stodden DE, Pesce C, Zarrett N, Tomporowski P, Ben-Soussan TD, Brian A, et al. Holistic Functioning from a Developmental Perspective: A New Synthesis with a Focus on a Multi-tiered System Support Structure. *Clin Child Fam Psychol Rev.* 2023;26(2):343-361.
102. Kiss M. Impossible puzzle films: A cognitive approach to contemporary complex cinema. Edinburgh University Press. 2017.
103. Blasi MD, Giardina A, Giordano C, Coco GL, Tosto C, Billieux J, et al. Problematic video game use as an emotional coping strategy: Evidence from a sample of MMORPG gamers. *J Behav Addict.* 2019;8(1):25-34.
104. Paulus FW, Ohmann S, von Gontard A, Popow C. Internet gaming disorder in children and adolescents: a systematic review. *Dev Med Child Neurol.* 2018;60(7):645-659.
105. Caponnetto P, Casu M, Amato M, Cocuzza D, Galafaro V, La Morella A, et al. The Effects of Physical Exercise on Mental Health: From Cognitive Improvements to Risk of Addiction. *Int J Environ Res Public Health.* 2021;18(24):13384.
106. Russell MA, Gajos JM. Annual Research Review: Ecological momentary assessment studies in child psychology and psychiatry. *J Child Psychol Psychiatry.* 2020;61(3):376-394.
107. Su Z, McDonnell D, Roth S, Li Q, Šegalo S, Shi F, et al. Mental health solutions for domestic violence victims amid COVID-19: a review of the literature. *Global Health.* 2021;17(1):67.
108. de Vries H, Oldenhuis H, Kamphuis W, Sanderman R, van der Schans C. Investigating resilience patterns based on within-subject changes in sleep and resting heart rate variability. 2019.
109. Rugg-Gunn M. Managing Talent: A Short Guide for the Digital Age. Taylor & Francis. 2023.
110. Davids EL. The Evolution of Film Genres: A Comparative Analysis of Hollywood and Bollywood. *Art and Society.* 2023;2(4):15-34.
111. Goldston J, Chaffer TJ, Martinez G. The Metaverse as the Digital Leviathan: A Case Study of Bit. Country. *JABE.* 2022;24(2).
112. Kobe, R. Mental Health and Wellbeing. Richmond Kobe. 2023.
113. Pendy B. From Traditional to Tech-Infused: The Evolution of Education. *BULLET: Jurnal Multidisiplin Ilmu.* 2023;2(3):767-777.
114. Pahl K, Rowsell J. Living literacies: Literacy for social change. MiT Press; 2020 Sep 22.
115. French M, Hesselgreaves H, Wilson R, Hawkins M, Lowe T. Harnessing Complexity for better outcomes in Public and Non-profit Services. Policy Press. 2023;144.
116. Southgate E. Virtual reality in curriculum and pedagogy: Evidence from secondary classrooms. Routledge, 2020.
117. Goldberg MH, Gustafson A. A Framework for Understanding the Effects of Strategic Communication Campaigns. *Int J Strateg Commun.* 2023;17(1):1-20.
118. Waters L, Loton D. SEARCH: A meta-framework and review of the field of positive education. *Int J Appl Posit Psychol.* 2019;4:1-46.
119. Kaur R, Gabrijelčić D, Klobučar T. Artificial intelligence for cybersecurity: Literature review and future research directions. *Inf Fusion.* 2023:101804.
120. Susanni P, Susanni P. The use of a Cooperative Learning Environment in Structuring a Music Start-up Course for Music Students: A Feasibility Study.
121. Pedersen GA, Gebrekristos F, Eloul L, Golden S, Hemmo M, Akhtar A, et al. Development of a tool to assess competencies of problem management plus facilitators using observed standardised role plays: the EQUIP competency rating scale for problem management plus. *Intervention.* 2021;19(1):107-117.
122. Koen M, Neethling M, Taylor B. The impact of COVID-19 on the holistic development of young South African at-risk children in three early childhood care and education centres in a rural area. *Perspect Educ.* 2021;39(1):138-156.
123. Pereira L, Sitas N, Ravera F, Jimenez-Aceituno A, Merrie A. Building capacities for transformative change towards sustainability: imagination in intergovernmental science-policy scenario processes. *Elem Sci Anth.* 2019;7:35.
124. Ben Slimane S, Coeurderoy R, Mhenni H. Digital transformation of small and medium enterprises: a systematic literature review and an integrative framework. *Int Stud Manag Organ.* 2022;52(2):96-120.
125. Jackson B, Booth R, Jackson KT. The Good, the Bad, and the Vision: Exploring the Mental Health Care Experiences of Transitional-Aged Youth Using the Photovoice Method. *Qual Health Res.* 2022;32(12):1915-1931.
126. Brees AL. The New Age of Christian Healing Ministry and Spirituality: A Meta-Synthesis Exploring the Efficacy of Christian-Adapted Complementary Therapies for Adult Survivors of Familial Trauma. Liberty University, 2021.
127. Toles, G. *Curtains of Light: Theatrical Space in Film.* State University of New York Press, 2021.
128. Valley J. The Relationship between Time Use on Occupations in the Virtual Context, Life Meaning, and Psychological Well-Being in the Lives of Suburban High School Students (Doctoral dissertation, Nova Southeastern University), 2022.
129. Briggs J. CEO practice: towards a framework of past, present and future (Doctoral dissertation, University of Sheffield), 2019.
130. Ud Din I, Almogren A. Exploring the psychological effects of Metaverse on mental health and well-being. *Inf Technol Tour.* 2023:1-23.
131. Renati R, Bonfiglio NS, Rollo D. Italian University Students' Resilience during the COVID-19 Lockdown-A Structural Equation Model about the Relationship between Resilience, Emotion Regulation and Well-Being. *Eur j investig health psychol educ.* 2023;13(2):259-270.
132. Yang X, Ebo TO, Wong K, Wang X. Relationships between psychological flexibility and internet gaming disorder among adolescents: Mediation effects of depression and maladaptive cognitions. *PLoS One.* 2023;18(2):e0281269.