The Role of Avoidance Coping and Escape Motives in Problematic Online Gaming: A Systematic Literature Review

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Abstract

Over the past two decades, research into Internet Gaming Disorder (IGD) has markedly increased due to worldwide spread of online videogames. The reasons and motivations for playing greatly contribute to its popularity. Escapism and avoidance coping strategies have been studied extensively and conceptualized as motives to play. A growing research base has demonstrated a strong association between these motives to play and negative gaming outcomes. Consequently, the aim of the present systematic review was to provide a comprehensive overview of the role of avoidance coping and escape motives in problematic online gaming. A systematic literature search was carried out using academic databases and a total of 26 empirical studies met the inclusion criteria. The results show that escapism and avoidance coping represent both a predictor of IGD and play a mediating role between many psychological factors (e.g., self-esteem, loneliness, self-concept, anxiety) and problematic online gaming. However, the review also highlights the paucity of longitudinal studies that hinder the determination of the causal direction of these associations. Despite this limitation, the evidence has important implication for developing more effective prevention programs and clinical interventions.

Keywords Problematic online gaming · Internet gaming disorder · Avoidance · Escapism · Motives to play

Behavioral addictions (i.e., addictions that do not involve the ingestion of a psychoactive substance) are becoming increasing commonplace in modern society, particularly online addictions which are inextricably linked to the way humans now live, continued technological advancement, increased opportunity and availability, and the instant gratifications that such

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technologies provide. One such area is that of gaming addiction (Alonso-Fernández 1999). Griffiths (1995, 1996, 2005, 2009) argued that all addictions share more commonalities than differences and identified six particular characteristics: *mood modification*, whereby activities and psychoactive substances give a subjective sensation of pleasure such as calming or exciting effects; *tolerance* whereby an individual needs an increasing quantity or amount of time to obtain the same initial mood-modifying effects; *withdrawal symptoms* whereby when the behavior is interrupted or reduced, the individual experiences unpleasant feeling states and/or physical effects, e.g., irritability, shakes, moodiness; *conflict* whereby there are conflicts between individuals and those around them (interpersonal conflicts), negative impacts on their occupation and/or education (inter-activity conflicts), and within individuals themselves (intrapsychic conflicts), caused by the chronic use of the substance or by dysfunctional behavior; *relapse* whereby there is a tendency to restart the activity or the use the substance again after a period of interruption; and *salience* whereby the substance or behavior constantly dominates the thoughts, feelings, and behavior of individuals.

A number of researchers have argued that it is important not to overpathologize common behaviors that occur in the online digital environment (e.g., gaming, shopping) and to determine exclusion criteria for excessive behaviors that should not be considered pathological (Kardefelt-Winther et al. 2017). On the other hand, other researchers support the idea that pathological internet-related behavior should be regarded most appropriately as a behavioral addiction (Brand et al. 2016; Weinstein et al. 2017). Currently, problematic gaming is considered a potential disorder, introduced into the Section III, "Emerging Measures and Models," of the latest (fifth) edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association 2013) in the form of internet gaming disorder (IGD). To diagnose this disorder, it is necessary that this condition persists for more than 12 months and five criteria or more (out of nine) need to be endorsed. The nine IGD criteria comprise the following: (i) preoccupation with internet games; (ii) withdrawal symptoms when internet gaming is not possible (irritability, anxiety, or sadness); (iii) tolerance; (iv) unsuccessful attempts to limit participation in internet games; (v) loss of interest in previous hobbies and entertainment as a result of, and with the exception of, internet games; (vi) continued excessive use of internet games despite awareness of psychosocial problems; (vii) deception of family members, therapists, or others about the amount of internet gaming; (viii) use of internet games to escape or mitigate negative moods (e.g., despair, guilt, anxiety); and (ix) jeopardizing or losing a relationship, a job, or an educational or a significant career opportunity due to participation in internet games. These diagnostic criteria mainly originated from a combination of pre-existing clinical criteria and unofficial conditions such as gambling disorder, substance use disorder, and generalized internet addiction (Kuss et al. 2017).

In the literature, the online gaming genre that has been most researched is Massively Multiplayer Online Role-Playing Games (MMORPGs). In MMORPGs, a very large number of players assume the role of the character in a persistent detailed open virtual world, usually a fantasy world. A game's storyline evolves in real time, and individuals must collaborate with other players in the game to succeed in more complex goals. Research has identified strong associations between problematic behavior in MMORPGs and the escapism motive (i.e., avoidance of real-life problems), role-playing (i.e., assuming the role of an in-game character), and personalization of character (Kuss et al. 2012). Two other popular online game genres that have increasingly been researched are Multiplayer Online Battle Arena (MOBA) games and First-Person Shooter (FPS) games. MOBA games involve relatively short team matches (30–

60 min) in which a single character, as part of a team, battles against other teams, and FPS games involve players in combat with enemies from a first-person perspective.

A lot of research has concentrated on the more negative aspects of gaming such as psychosocial problems (Kuss and Griffiths 2012), aggressive/oppositional behavior and hostility (Griffiths 1999), psychiatric distress (Pontes 2017), dysfunctional coping, poor school performance (Gentile et al. 2004), lower self-esteem (Griffiths 1996), loneliness (Lemmens et al. 2011), perceived stress (Canale et al. 2019), and maladaptive cognitions (Kaczmarek and Drążkowski 2014). Moreover, medical and psychosomatic problems have been found to be consequences of IGD including sleep abnormalities, elevated risk for premature mortality, chronic diseases (such as obesity, cardiovascular disease, high blood pressure, triglycerides, high-density lipoprotein cholesterol) (Katzmarzyk 2010), unfavorable changes in hemodynamic parameters (Borusiak et al. 2008), and physical injuries related to repetitive strain (Zapata et al. 2006).

With the proliferation of online games, there has been increasing concern over the excessive use of gaming and its impact on psychological well-being. In modern society, videogames represent a widespread and popular leisure activity and are played in millions of homes worldwide. The videogame industry is continuously growing and developing, and 2018 was a record-breaking year for videogame industry, with total videogame sales exceeding $43.4 billion, and growing at several times the rate of the overall economy (ESA, 2019). The gaming industry is expected to further grow and virtual reality gaming has likely become the backbone of the future gaming industry (Mordor Intelligence 2019).

Compensatory Internet Use Model

In the field of internet addictions, some authors (e.g., Kardefelt-Winther 2014, 2017; Snodgrass et al. 2014) have noted the tendency to examine internet use disorders (including problematic online gaming) only from the perspective of addiction. They have argued that an addiction perspective, grounded in the knowledge of substance addictions, has hindered the study of internet use disorders, and claiming such a perspective does not contribute much to improving the comprehension of the antecedents and etiology that facilitate their onset and development.

Scholars are in disagreement concerning a unifying a theory of addiction although some empirical findings indicate coping and compensation as major underlying contributors for internet use disorders. For instance, Armstrong et al. (2000), investigating the psychological risk factors for internet addictions, found out that problematic internet users generally used the internet for an avoidance reason, and viewed the behavior as a coping strategy rather than an addiction. Similarly, a study conducted by Lemmens et al. (2011) suggested that pathological online gaming may be a way to avoid real-life problems (e.g., loneliness, low self-esteem), through virtual social relationships or achievements. Here, environmental stressors might cause different psychosomatic strains that players can avoid through the cognitive distraction of gaming and, in the long-term, could lead to pathological online gaming (Snodgrass et al. 2014).

The basic principle of the compensatory internet use model is that the source of the issue is a response given by the individual to their negative life situation, facilitated by an internet application, such as social media use, online gambling, or online gaming (Kardefelt-Winther 2014). For instance, if the individual's life is characterized by a lack of adequate social

stimulation, they tend to be more motivated to go online to interact and that is made easier by the employment of applications where socializing is provided, such as online videogames or social networking sites. Moreover, Scerri et al. (2019) pointed out that need-fulfillment deficits were associated with IGD. Therefore, in the compensatory model, the motivations for the use of online applications are based on psychosocial issues or unsatisfied real-life needs.

Motives to Play

The captivation of videogames appears to lie in their potential to fulfill various psychological needs that can be conceptualized as motives to play. Demetrovics et al. (2011) identified seven motivational dimensions for online gaming: social motivation, escape, competition, skill development, coping, fantasy, and recreation. Escape and coping, especially avoidance coping strategies, have been studied extensively (Deleuze et al. 2019; Brand et al. 2014; Brand et al. 2014; Laconi et al. 2017). Although separate constructs, escape and avoidant coping are highly correlated with each other. While escapism emphasizes leaving reality, avoidance strategies emphasize the game's capability to help cope with real problems (stress, aggression, anxiety), by helping individuals manage unpleasant moods and unwanted impulses. In the context of addictions, many studies report a higher use of avoidance strategies to cope with life problems and the seeking of a temporary escape from reality, in the same way that individuals use of substances like alcohol (Bacharach et al. 2008), or behaviors like gambling (Bergevin et al. 2006; Blaszczynski and Nower 2002) and online gaming (Hussain and Griffiths 2009; Demetrovics et al. 2011; Przybylski et al. 2010; Hemenover and Bowman 2018).

Coping is a multifaceted and complex construct. When individuals face a stressful event, they can implement a series of emotional, cognitive, and/or behavioral responses. These responses depend on the subjective evaluation of the stressful event and on the perception of control on it. Lazarus and Folkman (1984) defined coping as "persistently changing cognitive and behavioral efforts in order to manage specific external and/or internal demands that are seen as taxing or exceeding the resources of the person" (p.141). The outcomes of this process can be adaptive or maladaptive depending on whether the individual has been able to cope with the stressors adequately. The transactional model proposed by Lazarus and Folkman (1984) emphasizes two types of coping: *problem-focused coping* includes the active search of information, solutions to the problem, and behaviors aimed at modifying the circumstances at the origin of the stressful event, so it is used in situations perceived as more easily controlled; *emotion focused coping* is aimed at regulating emotions through their expression and modulation and can be considered less adaptive. Emotion focused coping includes ventilation of feelings or avoiding problems, such as self-blame, anger, self-distraction, withdrawal, and/or use of drugs. It is known that dysfunctional coping strategies, especially emotion focused and avoidant coping strategies predict risky behaviors among adolescents (Cooper et al. 2003) and play a role in the relationship between stressful life events and the etiology of psychiatric disorders (Lazarus and Folkman 1984; Rohde et al. 1990) such as anxiety and depression (Ebata and Moos 1991; Donovon and Spence 2000), whereas problem-focused coping promotes healthier behaviors (Stein and Nyamathi 1998). Coping strategies change during adolescent development and the development of characteristic ways of coping in childhood and adolescence may be precursors to patterns of coping in adulthood (Compas et al. 2001).

The escape motive refers to the intentional involvement in playing videogames to detach from the real world, to immerse into a fantasy world, and/or avoid real-life problems (Caplan et al. 2009). Escapism offers momentary fulfillment and gratification through the use of fanciful scenarios, whether through active participation (e.g., playing online games) or passive observation (e.g., watching movies or series) (Ebata and Moos 1991). Additionally, Evans (2001) suggest that escapism is a construct encompassing both psychological immersion and engagement of fantasy.

Yee (2006) developed a 10-factor model of motivation for MMORPG players that were grouped into three main headings: *achievement*, which encompasses advancement, mechanics, and competition; *social* which includes socializing, relationships, and teamwork; and *immersion*, which includes discovery, role-playing, customization, and escapism. Online videogames, and in particular MMORPGs, offer highly immersive experiences, allowing the player to experience a strong sense of presence in the imaginative game world. Therefore, escapism expands beyond simple psychological immersion, encompassing a believable absorption into the persistent, three-dimensional world (Warmelink et al. 2009). In order to develop prevention programs aimed at promoting moderate and responsible gaming, practitioners and research need to have a good knowledge of the motives as to why people participate in gaming.

The Present Study

The aim of the present study was to review and synthesize empirical research examining the role that escapism and avoidant coping motives play in problematic online gaming. Although escapism and avoidant coping are separate constructs, they are highly correlated with each other and researchers tend to offer no uniform definition in literature when investigating escapism as a motivation for online gaming. Scholars have generally not provided a clear distinction between escapism and avoidance, and the terms escapism and avoidance are often used interchangeably. This conceptual inconsistency makes it difficult to interpret findings if the researcher is unclear in communicating the meaning of these constructs in the first place. Therefore, clarifying the nature of escapism as an avoidant coping strategy should be seen as the basis for further research on this topic. Given the importance of this motive, the present literature review synthesizes the available research that has examined the role of avoidance coping strategies or escape in developing of problematic online gaming, according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Method

The review was conducted utilizing the PRISMA guidelines (Moher et al. 2009). In February 2020, a literature search was carried out via the following database: *PubMed*, *ProQuest*, *Web of Science*, *Google Scholar* and *EBSCO* that included *Academic Search Complete*, *PsycARTICLES*, and *PsycINFO*. The researches were conducted using the following search terms: gam* AND (addict* OR compuls* OR depend* OR problem* OR disorder) AND coping strategies OR avoidan* OR escape. Additionally, references reported in relevant studies identified were hand-searched to see if there were additional papers for inclusion in the review. Due to the inconsistent definition of "internet gaming addiction", papers which had "internet addiction" in their titles or in the abstract were considered, but only studies that assessed gaming addiction, gaming disorder, or problematic gaming use were included in the review. The inclusion criteria for the studies in the present review were: (i) being an empirical study comprising primary data (ii) published in a peer-reviewed paper from 2010 to 2020, (iii)

citing avoidance coping strategies, or escape as a motive for gaming, and (iv) having a sample size with more than 500 participants. Additionally, studies were excluded if they (i) had less than 500 participants, (ii) were qualitative studies, reviews, theoretical papers, or psychometric validation studies, (iv) were not published in the English language, and (iv) assessed escape as a symptom according to problematic gaming criteria (e.g., the DSM-5 escape criterion).

Study Selection

The database search parameters (full text, being published from 2010 to 2020 and in English language) yielded a total of 1859 hits, and 26 papers, reported in references lists, were hand-searched. The full study selection process is described in the PRISMA flow diagram (Fig. 1). The title and abstract of each study was examined. A total of 1764 publications were excluded because of unsuitability for the present review based on the inclusion and exclusion criteria. Consequently, 121 full texts of the papers were deemed suitable, for further examination to determine whether they could be included in the review. From 121 papers, 95 studies were excluded due to escape being assessed as a symptom according to DSM-5 ($n = 2$), no specific assessment of avoidance coping strategies or escape motives ($n = 12$), and no specifically referring to gaming ($n = 20$). Additionally, qualitative studies (n = 2), psychometric validation studies ($n = 11$), reviews ($n = 2$), and theoretical studies ($n = 2$) were excluded. Finally, studies with less than 500 participants ($n = 44$) were excluded. Following this process, a total of 26 studies were identified for inclusion in the present review. Table 1 provides a summary regarding detailed characteristics of included studies.

Results

Country of Origin

Concerning the country where the data of the included studies were collected, eight were cross-cultural studies. These eight studies collected data from (i) Australia, Europe, USA, Brazil, and smaller cohorts from a number of other countries (Loton et al. 2016), (ii) North and South America, Europe, Africa, and Australasia (Maroney et al. 2019), (iii, iv) Belgium, Switzerland, and France (Billieux et al. 2013, 2015), (v) Hungary, UK, Italy, Norway, Slovenia, France, Romania, and Korea (Kim et al. 2016), (vi) France, Italy and UK (Dauriat et al. 2011), (vii) Hungary, Romania, and Slovakia (Bányai et al. 2019) and the last study collected data from 45 countries (the majority of participants were from the UK) (Kirby et al. 2014). Data from the remaining studies were collected from Hungary ($n = 2$; Király et al. 2015, 2017), Germany ($n = 3$; Von Der Heiden et al. 2019; Rosenkranz et al. 2017; Dreier et al. 2017), China ($n = 2$; Li et al. 2016; Zhengchuan Xu et al. 2012), Sweden ($n = 2$; Hellström et al. 2012, 2015), UK ($n = 2$; Kardefelt-Winther 2014a, b), Australia (Schneider et al. 2018), Croatia (Šporčić and Glavak-Tkalić 2018), Italy (Milani et al. 2018), Canada (Biegun et al. 2020), Poland (Kaczmarek and Drążkowski 2014), Korea (Kwon et al. 2011), and Perù (Ramos-Diaz et al. 2018).

Participants' Characteristics

The studies reviewed comprised a total of 48,573 participants. Concerning the age of the samples, ten studies comprised both adolescent and adult samples (Király et al. 2015; Bányai
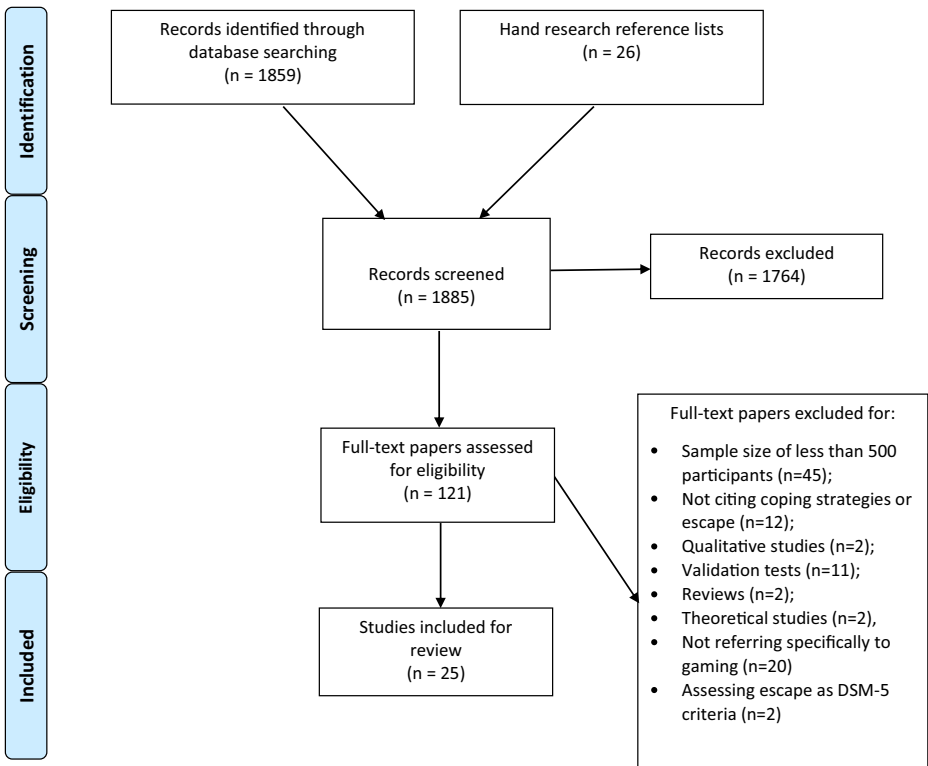
Fig. 1 PRISMA flow diagram of papers selected for systematic review

et al. 2019; Maroney et al. 2019; von der Heiden et al. 2019; Kardefelt-Winther 2014a, b; Kaczmarek and Drążkowski 2014; Dauriat et al. 2011; Ramos-Diaz et al. 2018; Király et al. 2017), six only adult samples (Loton et al. 2016; Šporčić and Glavak-Tkalić 2018; Billieux et al. 2013, 2015; Kim et al. 2016; Kirby et al. 2014), eight studies comprised school students from nine to 19 years old (Milani et al. 2018; Schneider et al. 2018; Rosenkranz et al. 2017; Kwon et al. 2011; Dreier et al. 2017; Hellström et al. 2012, 2015; Xu et al. 2012), and two studies comprised university students (Biegun et al. 2020; Li et al. 2016). Eleven studies comprised gamers without specifying the type of videogame played (Milani et al. 2018; Loton et al. 2016; Schneider et al. 2018; von der Heiden et al. 2019; Biegun et al. 2020; Rosenkranz et al. 2017; Kwon et al. 2011; Dreier et al. 2017; Kim et al. 2016; Király et al. 2017; Xu et al. 2012), five studies comprised World of Warcraft players (Kardefelt-Winther 2014a, b; Billieux et al. 2013, 2015; Kirby et al. 2014), two studies comprised MMORPG players (Kaczmarek and Drążkowski 2014; Dauriat et al. 2011), two studies comprised MMOPRG and FPS players (Király et al. 2015; Maroney et al. 2019), and two studies comprised general gamers and MMORPG players (Hellström et al. 2012, 2015). Samples of the four remaining studies comprised recreational and esport gamers (Bányai et al. 2019), FPS, role-playing, adventures, MOBA and MMORPG players (Šporčić and Glavak-Tkalić 2018), addicted and non-addicted general online gamers (Li et al. 2016), and general gamers and MOBA players (Ramos-Diaz et al. 2018). Among 26 studies, 16 studies collected data online (Király et al. 2015; Bányai et al. 2019; Šporčić and Glavak-Tkalić 2018; Loton et al. 2016; Maroney et al. 2019; von der Heiden et al. 2019; Kardefelt-Winther 2014a, b; Kaczmarek and Drążkowski 2014; Billieux

Table 1 Main characteristics of the 26 studies on problematic online gaming and avoidance and coping motives

Sstudy	Sample size	Gender distribution (%)	Age range and mean age (sd)	Sample characteristics	Operationalization of IGD	Operationalization of escape/avoidance
Király et al. (2015)	3186	89.74% male	Range = 14–54; M_{age} = 21.1 (5.9)	Hungarian MMORPGs1 and MOFPSs2 players	Problematic Online Gaming Questionnaire	Motives for Online Gaming Questionnaire
Bányai et al. (2019)	4284	89.89% male	Range = 14–58; M_{age} = 23.08 (6.57)	Esports3 and recreational Hungarian speaker gamers	Ten-item Internet Gaming Disorder Test (IGDT-10)	Motives for Online Gaming Questionnaire
Schneider et al. (2018)	823	49% male	Range = 12–19; M_{age} = 14.2 (1.4)	Australian school students	Internet Gaming Disorder Checklist	BriefCOPE4
Šporčić and Glavak-Tkalić (2018)	509	N/R	Range = 18–40; M_{age} = 23.14 (4.66)	Croatian FPS5 games, role-playing games, adventures, MOBA6, and MMORPG1 games	Internet Gaming Disorder Scale	Motives for Online Gaming Questionnaire
Loton et al. (2016)	552	N/R	Range = 18–59; M_{age} = 24.90 (7.28)	Fluent English speaker gamers	Addiction Engagement Questionnaire	Brief Approach-Avoidance Questionnaire
Milani et al. (2018)	612	47.2% male	Range = 9–19; M_{age} = 13.94 (2.44)	Italian school students	Video Game Addiction Questionnaire	Children's Coping Strategies Checklist-Revised1
Li et al. (2016)	651	46.6% male	Range = 18–22; M_{age} = 20.29 (1.39)	Chinese university students: 31 were identified as online game addicts and 623 were non-addicts	Internet Addiction Test Internet Addiction Scale Online Game Cognitive Addiction Scale	Coping Style Questionnaire
Biegun et al. (2020)	651	47.2% male	Range = N/R; M_{age} = 21 (N/R)	Canadian University Students	Video Gaming Test	Motives for Online Video Game Questionnaire
Maroney et al. (2019)	2261	88.6% male	Range = 18–64; M_{age} = 23.78 (5.47)	North and South American, European, African, Australasian FPS5, and MMRPG1 players	The Problematic Video Game Playing Test	Video Game Motivation Scale-Escapism Subscale The Video Game Uses and Gratification Instrument (VGUGS
von der Heiden et al. (2019)	2734	88.5%	Range = 13–65; M_{age} = 23.06 (5.91)	German gamers	Scale for Assessment of Internet and Computer Game Addiction	BriefCOPE4
Rosenkranz et al. (2017)	5667	50.3% male	Range = 12–19; M_{age} = 15.44 (1.73)	German Internet Gamers and Generalized Internet Users	Scale for Assessment of Internet and Computer Game Addiction	BriefCOPE4

Table 1 (continued)

Sstudy	Sample size	Gender distribution (%)	Age range and mean age (sd)	Sample characteristics	Operationalization of IGD	Operationalization of escape/ avoidance
Kardefelt-Winther (Kardefelt-Winther (2014a, b)	702	89% male	Range = 14–60; M_{age} = N/R	English speaker WoW7 gamers	Excessive online gaming was assessed by five negative outcomes of excessive online gaming that were adapted for WoW7 from previous studies	Escapism was measured with five items from Yee's (2007) gaming motivations inventory
Kaczmarek and Drążkowski (2014)	1056	93.3% male	Range = 12–49; M_{age} = 18.64 (5.12)	Polish MMORPG1 players	N/R	Motivations of Play in MMORPGs Scale
Billieux et al. (2013)	690	87.10% male	Range = 18–66; M_{age} = 26.22 (8.14)	French-speaking WoW7 players	Internet Addiction Test	Motivation to Play in Online Games Questionnaire
Dreier et al. (2017)	3967	54.5% male	Range = 12–18; N/R	German school students	Scale for Assessment of Internet and Computer Game Addiction	BriefCOPE4
Kim et al. (2016)	3041	59.9% male	Range = 20–49; N/R	Hungarian, English, Italian, Norwegian, Slovenian, French, Romanian, and Korean speaker gamers	Criteria IGD DSM-5	Motives for Online Gaming Questionnaire
Kwon et al. (2011)	1136	60.9% male	N/R; M_{age} = 14.01 (0.51)	Korean school students	Internet Addiction Scale	Escape from Self Scale
Dauriat et al. (2011)	696	93.1% male	Range = 13–54; M_{age} = 25.83 (7.36)	French, English, and Italian MMORPGs1 players	MMORPG1 Addiction Scale	The motivations to play were assessed with the question, "What importance do you give to the following aspects of the game?" in regard to 14 items
Ramos-Diaz et al. (2018)	821	98% male	N/R; M_{age} = 20 (3.69)	Peruvian gamers (79.3% MOBA6 gamers)	Ten-Item Internet Gaming Disorder Test (IGDT-10)	Motives for Online Gaming Questionnaire
Hellström et al. (2012, 2015)	7757	49.9% male	Range = 13–18; N/R	Swedish school students (89.4% MMORPGs1 players)	N/R Seven-item screening measure	15 affective statements, extracted from a qualitative study
Király et al. (2017)	5222	92.6% male	Range = 14–64; M_{age} = 22.2 (6.4)	Hungarian gamers	Ten-Item Internet Gaming Disorder Test (IGDT-10)	Motives for Online Gaming Questionnaire
	623	56% male		Chinese school students		

Table 1 (continued)

Sstudy	Sample size	Gender distribution (%)	Age range and mean age (sd)	Sample characteristics	Operationalization of IGD	Operationalization of escape/avoidance
Zhengchuan Xu et al. (2012)			Range = 12–18; M_{age} = about 15 N/R		Addiction Engagement Questionnaire	17 items asses 4 motivations factors (Advancement, Mechanics, Relationship and Escapism)
Billieux et al. (2015)	1057	87.67% male	Range = 18–66; M_{age} = 26.01 (7.96)	French-speaking WoW7 players	Internet Addiction Test	Motivation to Play in Online Games Questionnaire
Kirby et al. (2014)	565	79.6% male	Range = 18–58; M_{age} = 24.6 (N/R)	English-speaking WoW7 players	WoW7 Specific Problematic Usage/Engagement Questionnaire	Motivation to Play in Online Games Questionnaire

1 = Massively Multiplayer Online Role-Playing Games; 2 = Massively Online First-Person Shooter Games; 3 = electronic sports; 4 = Coping Orientation to Problems Experienced; 5 = First Personal Shooter; 6 = Multiplayer Online Battle Arena; 7 = World of Warcraft

et al. 2013, 2015; Kim et al. 2016; Ramos-Diaz et al. 2018; Dauriat et al. 2011; Király et al. 2017; Kirby et al. 2014) and ten collected data offline (Schneider et al. 2018; Milani et al. 2018; Li et al. 2016; Biegun et al. 2020; Rosenkranz et al. 2017; Dreier et al. 2017; Kwon et al. 2011; Hellström et al. 2012, 2015; Xu et al. 2012).

Operationalization of Problematic Gaming

To assess problematic gaming, the measures utilized by the studies comprised the following: Ten-item Internet Gaming Disorder Test ($n = 3$; Király et al. 2017; Bányai et al. 2019; Ramos-Diaz et al. 2018), Scale for Assessment of Internet and Computer Game Addiction ($n = 3$; Rosenkranz et al. 2017; Dreier et al. 2017; von der Heiden et al., 2019), Internet Addiction Test ($n = 3$; Billieux et al. 2013, 2015; Kwon et al. 2011), and Addiction Engagement Questionnaire ($n = 2$; Loton et al. 2016; Xu et al. 2012). Two studies did not refer to any screening measures because they did not assess problematic online gaming (Kaczmarek and Drążkowski 2014; Hellström et al. 2015). In two studies, problematic gaming was assessed using five negative gaming outcomes adapted for WoW players (Kardefelt-Winther 2014a, b). Two studies utilized a combination of two different measurements: Video Game Addiction Questionnaire and Internet Addiction Test (Milani et al. 2018) and Online Game Cognitive Addiction Scale and Internet Addiction Test (Li et al. 2016). The nine remaining studies utilized the Problematic Online Gaming Addiction (Király et al. 2015), Internet Gaming Disorder Checklist (Schneider et al. 2018), Internet Gaming Disorder Scale (Šporčić and Glavak-Tkalić 2018), Video Gaming Test (Biegun et al. 2019), the DSM-5 IGD criteria (Kim et al. 2016), MMORPG Addiction Scale (Dauriat et al. 2011), Problematic Video Game Playing Test (Maroney et al. 2019), WoW Specific Problematic Usage/Engagement Questionnaire (Kirby et al. 2014), and seven-item screening measure (Hellström et al. 2012).

Operationalization of Escapism/Avoidance

Among the 26 studies, 19 assessed escapism and seven assessed avoidance coping. For those that assessed escapism, the measures utilized by the studies comprised the following: Motives for Online Gaming Questionnaire ($n = 7$; Király et al. 2015; Bányai et al. 2019; Šporčić and Glavak-Tkalić 2018; Biegun et al. 2019; Kim et al. 2016; Király et al. 2017; Ramos-Diaz et al. 2018), five items from Yee's Gaming Motivations Inventory (2007) ($n = 2$; Kardefelt-Winther 2014a, 2014b), Motivations to Play in Online Games Questionnaire ($n = 3$; Billieux et al. 2013, 2015; Kirby et al. 2014), Video Game Motivation Scale-Escapism subscale and Video Game Uses and Gratification Instrument ($n = 1$; Maroney et al. 2019), Motivations of Play in MMORPGs Scale ($n = 1$; Kaczmarek & Drazkowski, 2014), Escape From Self Scale ($n = 1$; Kwon et al. 2011), and a 17-item questionnaire assessing four motivation types based on the functional needs of online game playing from previous research (they mainly used Yee's 2006 motivations) ($n = 1$; Xu et al. 2012). Finally, three studies assessed escapism with specific bespoke questions rather than a psychometric measure (Dauriat et al. 2011; Hellström et al. 2012, 2015). For those that assessed avoidance coping, the measures utilized by the studies comprised the following: Brief Coping Orientation to Problems Experienced ($n = 4$; Rosenkranz et al. 2017; von der Heiden et al. 2019; Schneider et al. 2018; Dreier et al. 2017), Children's Coping Strategies Checklist-Revised-1 (Milani et al. 2018), Brief Approach-Avoidance Questionnaire (Loton et al. 2016), and Coping Style Questionnaire (Li et al. 2016).

Risk of Bias

Table 2 summarizes the risks of bias assessed in each study. All studies (i) had cross-sectional designs that do not allow conclusions to be made about the causal relationships among variables, (ii) utilized self-report survey methodologies and therefore subject to well-known biases (e.g., social desirability, memory recall), and (iii) reported cutoff criteria based upon self-reporting that might not be reliable enough for diagnosis. Moreover, all studies, apart from two (Li et al. 2016; Dreier et al. 2017), utilized non-probability (self-selecting) sampling (e.g., no representative samples). There were also other sample biases. For instance, 13 studies had a highly imbalanced gender distribution with heavily male-dominated samples (Király et al. 2015; Bányai et al. 2019; Maroney et al. 2019; von der Heiden et al., 2019; Kardefelt-Winther 2014a, b; Billieux et al. 2013, 2015; Kaczmarek and Drążkowski 2014; Dauriat et al. 2011; Király et al. 2017; Ramos-Diaz et al. 2018; Kirby et al. 2014), and one study only collected data from urban dense areas (Milani et al. 2018). With regard to measurement bias, four studies lacked rigorous or psychometrically validated measures (Kardefelt-Winther 2014a, b; Dauriat et al. 2011; Király et al. 2017) and four have limitations due to using BriefCOPE because some of its subscales have poor internal reliability and there is a tendency to report specific strategies rather than adopting different coping styles more dynamically to deal with different problems (Schneider et al. 2018; Dreier et al. 2017; Rosenkranz et al. 2017; von der Heiden et al. 2019).

Main Findings

Table 2 also shows the main findings of each study. Among the studies reviewed, each suggested the existence of a significant relationship between escapism or avoidance coping strategies and problematic online gaming. Billieux et al. (2015) found out that the problematic online gaming is highly heterogeneous and depends on a wide range of psychological factors. One of the main factor involved factor was escapism motive. It characterized two, of the three clusters of problematic gamers that authors classified. Members of the first cluster were named "unregulated escapers" and for them, excessive use can be conceptualized as a maladaptive coping strategy serving to overcome negative effects and/or negative life events. The second cluster included individuals mainly motivated by achievement and escapism with high level of self-esteem. For them, the "virtual" self has overwhelmed the "real" self, implying a potential denial of real life and an over-involvement in virtual life. Those who played for escape motives showed high risk of depressive, musculoskeletal and psychosomatic symptoms (Hellström et al. 2015), and having several negative consequences such as troubles with parents, less sleep due to gaming, forgetting to eat, and not spending time with friends (Hellström et al. 2012). Ten studies reported that escapism was associated with (and might be a predictor of) IGD and increased time spent gaming (Király et al. 2017; Kwon et al. 2011; Xu et al. 2012; Kim et al. 2016; Kaczmarek and Drążkowski 2014; Bányai et al. 2019; Šporčić and Glavak-Tkalić 2018; Biegun et al. 2019; Ramos-Diaz et al. 2018), social anxiety, and loneliness (Kardefelt-Winther 2014b). These results were also found among MMOPRG and FPS players (Billieux et al. 2013; Dauriat et al. 2011; Maroney et al. 2019). High escapism score was associated with stronger beliefs that the virtual world is as realistic as the real world (individuals think/believe the virtual world is as real as the real world), leading to decreased offline support for real world problems and reduced levels of well-being (Kaczmarek & Drazkowski, 2014). Moreover, escapism appears to mediate the relationships between (i) self-esteem, stress, and negative outcomes (Kardefelt-Winther 2014a, b), (ii) problematic online gaming and self-concept

Table 2 Main findings, study limitations, and risk of biases in the 26 studies reviewed

Study	Main findings	Study limitations1	Risk of bias2
Király et al. (2015)	MMORPG players scored significantly higher on fantasy, escape, Problematic Online Game Questionnaire, the Global Severity Index, and recreation scale. Psychiatric symptoms are directly and indirectly (via escape and competition) negatively associated with POG3. The results of the present study suggest that in contrast to playing to escape everyday problems, gaming can also be used as an adaptive coping strategy for stress release or tension reduction without necessarily leading to problematic use.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Hungarian-only data. The gender distribution was highly imbalanced with more male gamers the female gamers.	Sample bias due to self-selecting participants and lack of a significant female sample.
Bányai et al. (2019)	Among both esport and recreational gamer groups, escapism motive appeared to be the most powerful predictor of gaming disorder. Both recreational and esport gamers did not differ significantly in the mediation effect of escapism but the motivation itself may have different effects among different populations.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Hungarian-only data. The gender distribution was highly imbalanced with more male gamers the female gamers. The categorization of esport and recreational gamers was not supported by rigorous empirical methods.	Sample bias due to self-selecting participants and lack of a significant female sample.
Schneider et al. (2018)	Denial and behavioral disengagement (avoidant coping strategies) were significantly positively correlated with IGD. Denial coping was a significant predictor of IGD. Adolescents who had a tendency toward cognitive and behavioral avoidance may be at greater risk of developing IGD. This suggests that games are often used to play to escape from reality and to relieve negative mood states.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Australian-only data. Limitations of the COPE measure in its assumption that individuals report a general tendency toward specific strategies, rather than adopting different coping styles more dynamically to deal with different problems. There was small number of students who were not administered the COPE questionnaire due to time constraints.	Sample bias due to self-selecting participants. Measurement bias due to limitations of the COPE.
Šporčić and Glavak-Tkalić (2018)	Escapism, fantasy, coping, sociability, and competition were positively correlated with IGD. The highest correlation was between IGD and the Escapism motive. Escape and self-concept clarity were significant predictors of problematic online	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Croatian-only data.	Sample bias due to self-selecting participants.

Table 2 (continued)

Study	Main findings	Study limitations1	Risk of bias2
	gaming. The findings suggest that excessive playing of online videogames is to avoid real-life difficulties, which are escapism motives may be related to problematic gaming. Additionally, self-concept clarity was both directly and indirectly (via escapism motive) associated with IGD.		
Loton et al. (2016)	Individuals with higher levels of video game addiction reported a greater use of avoidance-oriented coping, resignation, and withdrawal. These strategies appeared to increase the levels of distress, thwarted goal attainment, symptoms of burnout, and negative emotions. Video game addiction and high levels of engagement were associated with more use of resignation and withdrawal coping. Findings demonstrated that coping is an important partial mediator in the relationship between video game addiction and mental health, but does not explain the entire relationship.	Limited representativeness and generalizability of gamer population due to the gamers identified themselves as problematic gamers.	Sample bias due to self-selecting participants.
Milani et al. (2018)	Children and adolescents affected by IGD and Internet addiction (both at pre-clinical and clinical levels) were characterized by poorer quality of interpersonal relationships, poorer coping strategies, anxiety/depression, withdrawal, social problems, thought problems, attention problems, aggressive behavior, internalization, and externalization. Problematic video gamers preferred to adopt dysfunctional coping strategies as distraction and avoidance. Sub-clinical condition tended to have better coping strategies. Risk factors for gaming addiction were being male and preferring avoidant coping strategies when in stressful situations.	Limited representativeness and generalizability of gamer population due to mainly youth from dense urban areas and self-reported nature of the Italian-only data.	Sample bias due to self-selecting participants and sample selection from dense urban areas.
Li et al. (2016)	The Coping Style Questionnaire showed that the IGD group showed a greater propensity toward	Limited representativeness and generalizability of Chinese college students and due to the nature	Sample bias due to different sociodemographic characteristics.

Table 2 (continued)

Study	Main findings	Study limitations1	Risk of bias2
Biegun et al. (2020)	Avoidance Coping Strategies than the non-IGA group, and the IGA group's scores were significantly higher for neuroticism. Stressful life events may be an important predictor of IGA. The magnitude of the ACSs mediation effect was dependent upon neuroticism. The desire to escape the negatives of real life was the strongest predictor of problematic online videogame play.	of the Chinese-only data. There is diversity in students' places of origin, major and cultural circumstances in the three universities and the possible cluster effect by university should be taken into account. Limited representativeness and generalizability of gamer population due to the self-reported nature of the Canadian-only data. Sample includes both average users and problematic video game users. Self-reported responses	Sample bias due to self-selecting participants.
Maroney et al. (2019)	In FPS players, both escapism and social interaction were significantly correlated with PVGU. Both depression and loneliness had significant indirect effects on Problematic Video Game Use mediated via escapism, but their effects were not significantly mediated via social interaction. Social anxiety had a significant indirect effect on PVGU via both escapism and social interaction. For MMORPG players, both escapism and social interaction were significantly correlated with PVGU. Depression-problem gaming and social anxiety-problem gaming relationships were only partially mediated by escapism motives.	Limited representativeness and generalizability of gamer population due to the self-reported data. The gender distribution was highly imbalanced with more male gamers the female gamers. Participants also had to identify as either FPS or MMORPG players but many individuals may play both types. The measure of escapism-related gaming motivations has marginal reliability and no validity data available and it is not clear how constructs used in non-online research (e.g., loneliness) translate into the online environment.	Sample bias due to self-selecting participants and lack of a significant female sample.
von der Heiden et al. (2019)	Behavioral disengagement (avoidance coping strategy) showed the strongest positive relation to potential video game use, followed by denial and self-distraction. Distracting oneself was clearly associated with a high level of psychological symptoms (tolerance, craving, loss of control, emotion regulation, withdrawal, and unsuccessful attempts to cut back). These gamers further reported low self-esteem and low life satisfaction, loneliness,	Limited representativeness and generalizability of gamer population due to the self-selected sample in which potentially problematic video players were overrepresented and self-reported nature of the German-only data. Limitations of the COPE measure in its assumption that individuals report a general tendency toward specific strategies, rather than adopting different	Sample bias due to self-selecting participants and lack of a significant female sample.

Table 2 (continued)

Study	Main findings	Study limitations1	Risk of bias2
	a preference for solitude, shyness, a lack of self-efficacy and social support, and poor achievement in school.	coping styles more dynamically to deal with different problems.	
Rosenkranz et al. (2017)	Problematic Internet gamers employed dysfunctional coping strategies, such as behavioral disengagement and denial, more frequently than non-problematic IGs.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the German-only data. The sample of IG could also include users who would not classify themselves primarily as IG despite indicating the highest possible answer. Cutoff criterion was based upon self-reporting and might not be reliable enough for diagnosis. Limitations of the COPE measure in its assumption that individuals report a general tendency toward specific strategies, rather than adopting different coping styles more dynamically to deal with different problems.	Sample bias due to self-selecting participants. Measurement bias due to operationalization of the sample of IG and cutoff criterion for classifying problematic users.
Kardefelt-Winther (Kardefelt-Winther 2014a)	Escapism was a positive and significant predictor of higher negative outcomes scores. Higher levels of stress were associated with negative outcomes of gaming, but this was an indirect effect explained by the escapism motive. This suggests that psychological characteristics may be more usefully explored as part of a chain of events rather than a focal point. Escapist behavior may therefore better compensate for the negative feelings stemming from a lack of social interaction offline. Social anxiety and loneliness were both significantly correlated with escapism.	Limited representativeness and generalizability of gamer population due to using only *WoW* player base. Author presents some reliability testing bit, no validity testing, and no exploratory or confirmatory factor analysis.	Sample bias due to self-selecting participants and lack of a significant female sample. Measurement bias due to lack of rigorously or psychometrically validated measures.
Kardefelt-Winther (Kardefelt-Winther 2014b)	Among players with high levels of stress, high escapism resulted in more negative outcomes. Among players with low level of stress, higher escapism resulted in fewer negative outcomes. There was a strong interaction effect between stress	Limited representativeness and generalizability of gamer population due to using only *WoW* player base. Author presents some reliability testing bit, no validity testing, and no exploratory or confirmatory factor analysis.	Sample bias due to self-selecting participants and lack of a significant female sample. Measurement bias due to lack of rigorously or psychometrically validated measures.

Table 2 (continued)

Study	Main findings	Study limitations[1]	Risk of bias[2]
	and escapism when predicting negative outcomes among the high negative outcomes group. With low self-esteem, higher escapism resulted in more negative outcomes. With high self-esteem, higher escapism results in fewer negative outcomes. There was a strong interaction effect between self-esteem and escapism when predicting negative outcomes in the negative outcomes group. The study did not find significant interaction effects between escapism and stress or between escapism and self-esteem in the group of low negative outcomes.		
Kaczmarek and Drążkowski (2014)	The findings suggested the specific pathways through which escapist motivations undermine the well-being of MMORPG players through depletion of offline social support. Escapism predicted more time spent in the virtual environment and a stronger belief that the MMORPG environment is as realistic as the real world. Escapism, gaming time, and realism beliefs independently predicted lower offline social support, a resource known to facilitate well-being.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Polish-only data. Lack of measurements of IGD.	Sample bias due to self-selecting participants and lack of significant female samples.
Billieux et al. (2013)	Achievement and escapism motives are central in problematic MMORPG use. The dysfunctional use of MMORPGs most often resulted in either an uncontrolled drive to look for achievement in the game, or a maladaptive strategy used to cope with negative emotions (e.g., depression, anxiety, or boredom). The escapism motive was unrelated to actual in-game behaviors.	Limited representativeness and generalizability of gamer population due to the self-reported data. The gender distribution was highly imbalanced with more male gamers the female gamers. Considered players to have a unique main avatar, although the authors cannot exclude the possibility that some participants had more than one character that they considered as main characters.	Sample bias due to self-selecting participants and lack of significant female samples.
Dreier et al. (2017)	IGD was related to a higher level of perceived stress and to specific coping strategies such as media-related coping, denial, self-distraction,	Limited representativeness and generalizability of gamer population due to the self-reported nature of the German-only data. Limitations of the	Measurement bias due to lack of validation of BriefCOPE.

Table 2 (continued)

Study	Main findings	Study limitations1	Risk of bias2
	self-blame, and behavior disengagement. Media-related coping and behavioral disengagement was predictors for IGD. There was a significant association with a large proportion of children and adolescents meeting IGD criteria being classified as "Whales": subjects that spend the highest amounts of money and time on the game The capability of solving problematic in-game situation by spending money might be associated with the coping mechanisms of vulnerable free-to-play gamers. This opportunity supports the vulnerable gamer's attitude to escape problems by applying media-related coping strategies. Dysfunctional coping was reported to play a key role in developing IGD.	COPE measure in its assumption that individuals report a general tendency toward specific strategies, rather than adopting different coping styles more dynamically to deal with different problems. The BriefCOPE subscales had poor internal reliability: self-distraction ($\alpha = .45$) and active coping ($\alpha = .49$) as did the positive reframing subscale ($\alpha = .52$). A validation for their adapted BriefCOPE is required.	
Kim et al. (2016)	The risk group of IGD used online gaming to escape from reality or specific issues (coping, fantasy, competition) more than the healthy controls. Also, the risk group showed higher score in Motives for online gaming questionnaire in the use of online gaming as a coping mechanism compared to the healthy controls.	Limited representativeness of Korean population and limited generalizability to other countries. The diagnostic criteria of IGD in DSM-5 used in this study were based upon self-reporting.	Sample bias due to self-selecting participants.
Kwon et al. (2011)	IGA scores were most significantly correlated with escape and negative mood. The influence exerted on IGA by the tendency to escape was more important than exerted by negative interpersonal relationships. IGA was utilized as a way to escape from oneself an increase in self-discrepancy tended to aggravate not only a negative evaluation of oneself but also a negative mood, from which an attempt to escape arose as strong means for eliminating a negative mood. The scale Hostility of Perceived Parent-Child Relationship (Parent) and	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Korean-only data.	Sample bias due to self-selecting participants.

Table 2 (continued)

Study	Main findings	Study limitations1	Risk of bias2
	Perceived Parental Supervision Scale were taken as correlated and exhibited direct effects on negative mood and Escape.		
Dauriat et al. (2011)	The results showed that achievement and escapism were the best "predictors" of the MMORPG addiction scale.	Limited representativeness and generalizability of gamer population due to the self-reported data. The gender distribution was highly imbalanced with more male gamers the female gamers.	Sample bias due to self-selecting participants and lack of significant female samples. Lack of clinical validated measures
Ramos-Diaz et al. (2018)	Peruvian gamers who play for fantasy motives may do it because they are trying out new identities in gaming which may serve as an escape from real-life problems. Escape and fantasy were the best predictors of IGD.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Peruvian-only data. The gender distribution was highly imbalanced with more male gamers the female gamers.	Sample bias due to self-selecting participants and lack of significant female samples.
Hellström et al. (2015)	The highest incidence for depressive, musculoskeletal, and psychosomatic symptoms were found among weekday gamers, especially those who played for high escape motives and spent an excessive amount of time gaming.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the adolescent Swedish-only data.	Sample bias due to self-selecting participants.
Hellström et al. (2012)	Gamers that played to escape and for gaming status showed a higher risk of negative consequences (such as forgot to eat, do not have time for friends, troubles with parents due to gaming, or less sleep due to gaming) and whereas those who played for fun or social motives had a reduced risk of negative consequences. Motives are more important than the time spent.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Swedish-only data. Despite the large population, the subgroups of some variables were still rather small which may have affected the result.	Sample bias due to self-selecting participants.
Király et al. (2017)	Escape motives are more pronounced in problematic online gaming than in intense users. Escape was strongly associated with both problematic gaming and gaming time. The only substantial difference between gaming time and problematic use in term of motives was Escape which was the only motive consistently associated with problematic gaming (but not with gaming time).	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Hungarian-only data. The gender distribution was highly imbalanced with more male gamers the female gamers. Instruments used to assess problematic gaming and motives were validated in convenience samples, and were based on correlations with similar self-report	Sample bias due to self-selecting participants and lack of significant female samples. Lack of clinical validation of measures of IGD-10.

Table 2 (continued)

Study	Main findings	Study limitations[1]	Risk of bias[2]
Zhengchuan Xu et al. (2012)	Findings suggest the need for mastering game mechanics, relationships, and escapism increase online game playing and need for relationships and escapism increase online game addiction.	Limited representativeness and generalizability of gamer population due to the self-reported nature of the Chinese-only data. Considered only a limited set of functional need (need for relationship, escapism, mastering the machines, and advancement). measures lacking clinical validation (IGDT-10) or comparison with actual in-game behaviors.	Sample bias due to self-selecting participants.
Billieux et al. (2015)	Three different clusters of problematic gamers were determined. Members of the first cluster were named "unregulated escapers" and were characterized by low achievement, high escapism motives, poor self-esteem and high impulsive traits. For them, excessive use can be conceptualized as a maladaptive coping strategy serving to overcome negative affect and/or negative life events. The third cluster included individuals mainly motivated by achievement and escapism, with high level of self-esteem. For them the "virtual" self has overwhelmed the real self, implying a potential denial of real life and an over-involvement in virtual life. These results emphasize that problem online gaming is highly heterogeneous and depend on a wide range of psychological factors.	Limited representativeness and generalizability of gamer population due to the self-reported data. The gender distribution was highly imbalanced with more male gamers the female gamers.	Sample bias due to self-selecting participants and lack of significant female samples.
Kirby et al. 2014	Findings suggest that when gamers play for escape motive, there is a greater negative impact of playing time spent on psychological well-being.	Limited representativeness and generalizability of gamer population due to the self-reported data. The gender distribution was highly imbalanced with more male gamers the female gamers.	Sample bias due to self-selecting participants and lack of significant female samples.

1 = All studies have a cross-sectional design therefore correlations cannot determine the direction of causation; 2 = all studies have measurement bias due to using self-report questionnaire; 3 = Problematic Online Gaming

(Šporčić and Glavak-Tkalić 2018), (iii) problematic online gaming and loneliness, depression, and social anxiety (Maroney et al. 2019), and (iv) playing time spent and the its negative impact on psychological well-being (Kirby et al. 2014). Some avoidance coping strategies appear to be significant factors in problematic online gamers: self-distraction was associated with low self-esteem and life satisfaction, shyness, poor achievement at school, loneliness, and lack of self-efficacy and social support (von der Heiden et al., 2019); behavioral disengagement and denial were significant predictors of IGD (Schneider et al. 2018; Dreier et al. 2017) and were adopted by problematic gamers more frequently than non-problematic gamers (Rosenkranz et al. 2017). In addition, avoidance coping strategies mediated the relationship between IGD and negative consequences, such as level of distress, thwarted goal attainment, burnout, and negative emotion (Loton et al. 2016), and between IGD and stressful events (Li et al. 2016). Dysfunctional coping strategies, such as avoidance, might represent a risk factor for pre-clinical and clinical levels of IGD (Milani et al. 2018). Only Kiraly et al. (2015) reported that, despite MMORPG players scoring higher on escape, psychiatric symptoms (somatization, obsession compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) were both directly and indirectly, via escape, negatively associated with problematic online gaming. The authors argued gaming can also be used as an adaptive coping strategy for stress relief or tension reduction for a short time, without necessarily leading to problematic use (i.e., playing games to escape everyday difficulties appears to be a motivating behavior that can ease psychiatric distress).

Discussion

The present review identified studies that empirically investigated the role played by avoidance strategies or escape in the development of the problematic online gaming. Problematic online gaming is partly characterized by escaping from unpleasant mood states so a natural relationship was expected. The main aims of the study were to confirm the existence of this relationship and to synthesize empirical research examining the role that escapism and avoidant coping motives play in problematic online gaming. The findings suggest that escape from real-life problem or dysphoric mood is associated with several negative psychosocial and physical outcomes (Hellström et al. 2012, 2015; Kardefelt-Winther 2014b; von der Heiden et al. 2019) and might be a predictive factor of IGD (Király et al. 2017; Kwon et al. 2011, Xu et al. 2012; Kim et al. 2016; Kaczmarek and Drążkowski 2014; Bányai et al. 2019; Šporčić and Glavak-Tkalić 2018; Biegun et al. 2019; Ramos-Diaz et al. 2018; Schneider et al. 2018; Dreier et al. 2017). It is known that a wide range of psychological factors are involved in the development of problematic online gaming and the relationships between many of them are complex (Billieux et al. 2015). Many studies showed that escape and coping motives have been found to mediate the relationship between negative outcomes and several psychological factors, such as loneliness, psychiatric disorders (Maroney et al. 2019), self-concept (Šporčić and Glavak-Tkalić 2018), self-esteem, and stress (Kardefelt-Winther 2014a, b). Some of these psychological factors were more strongly associated with MMORPGs, because these games provide a virtual world where an individual can interact with players from all over the world, and completing ever higher difficulty levels motivates individuals to develop their own game skills, and the personalization of character influences the younger gamers' self-concept. This last aspect is particularly relevant for adolescents who have a self-concept that is still evolving and this might lead to a higher risk of negative outcomes. These features reinforce individuals

with different personality characteristics. Additionally, Kaczmarek and Drążkowski (2014) pointed out that individuals who play to avoid real-life problems and experience negative mood states believe that virtual world is as real as the real world. Similarly, Warmelink et al. (2009) argued that escapism might represent complete absorption in a fantasy world, and not only a psychological distraction.

Consequently, if the motivation to go online fulfills an unsatisfied real-life need and the online applications (in this case, gaming) alleviate the offline issues, an individual may feel a strong desire to spend more time online which for a minority could lead to problematic consequences. This supports the contention that the use of internet applications may be an understandable and effective coping strategy, despite the fact that for a minority, problematic outcomes might occur. Accordingly, some researchers have argued that maladaptive coping strategies may be considered as an addiction because the coping behavior is repeatedly engaged in to avoid or manage offline problems and sometimes these are followed by negative outcomes. Such a conceptualization concerning coping and addiction suggests the formation of a vicious circle (Kardefelt-Winther 2014).

The reviewed studies have their limitations. All studies employed a cross-sectional design and it was not possible to draw causal inferences from the data about the relationship between the variables studied. Therefore, experimental methods and longitudinal designs are required for future research to provide more reliable conclusions about the causal direction of these effects. Furthermore, research in this area has tended to focus more on young male gamers (predominately due to the sampling methods used, such as online forums, websites), and this has resulted in limited generalizability of the results. A further limitation was the decision to include only studies with more than 500 participants in the review. This led to the exclusion of studies with some weaker methodologies, but possibly excluded longitudinal studies and studies using clinical samples which potentially limit the generalizability of the results. Regarding measurement biases, only self-report measures were used, which introduces well-known biases such as social desirability and memory recall. Additionally, some studies adopted (i) the BriefCOPE (Carver 1997) in which individuals report a general tendency toward specific strategies, rather than adopting different coping styles more dynamically to deal with different problems (Rosenkranz et al. 2017; von der Heiden et al. 2019; Schneider et al. 2018; Dreier et al. 2017) or (ii) measures without rigorous or psychometric validation (Kardefelt-Winther 2014a, b). Consequently, future research should opt for different evaluation procedures such as information from parents or partners, objective measures by using new technologies, such as computer programs to monitor the individuals' game behavior, and daily diaries that would be useful to establish the extent to which everyday negative feelings, motives, and online gaming are interrelated (providing also more ecologically valid data). Finally, two further limitations should be noted. First, no specific software was used in conducting and synthesizing the papers reviewed, and second, the study was not preregistered with PROSPERO.

Clinical Implications

Overall, problematic life events or stressful situations can motivate individuals to go online and use specific applications, such as videogames, to fulfill unsatisfied needs or relieve dysphoric mood states (Kiraly et al. 2015). It is worth noting that this can lead to both positive and negative outcomes, that is, positive when the compensation is successful (feeling better and where applications have been used for short time) and negative when this mechanism

becomes persistent and the intensity of the use compromises other areas of an individual's life. Furthermore, these are not necessarily mutually exclusive.

Therefore, the question that arises is when or for whom such motivations may be harmful. Parents, educators, and health professionals should not necessarily be worried about online gaming as a way for individuals to cope with daily stressors. However, for small minority, excessive gaming can become a problematic behavior because such motives might result in compulsive engagement in the game and result in negative real-life consequences (Young 2009). From a practical standpoint, if motivations play an important role in excessive and problematic gaming, a better understanding of how individuals attempt to cope with real-life problems and negative feelings should suggest more effective prevention and intervention measures. Studies have shown that reducing the time spent online gaming alone does not appear to be an effective intervention (Šporčić and Glavak-Tkalić 2018). In most cases, prevention programs include psycho-education interventions and tools that have the development of healthier coping strategies as the main outcome so that individuals can better manage daily life stressors (Kuss and Griffiths 2012).

The present review suggests that coping style might be a useful mechanism for the clinical formulations of problematic online gaming, leading to the development of more adaptive, problem-focused coping strategies and redirecting gaming activities toward the search for new meaningful and productive opportunities. The main goals of assisting problematic gamers should be developing awareness of the negative influences of gaming and recognizing cognitive pitfalls that lead to denial or minimizing the distress they experience in their lives (King and Delfabbro 2016). With the promulgation of prevention programs at an early age and underpinned by empirical knowledge concerning the risk factors as motivations for gaming, the greater the possibility that children and adolescents will be protected from the dangers and consequences of excessive online gaming.

Compliance with Ethical Standards

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