

## **Internet Gaming as a Behavioral Addiction in Adolescents**

Brooklynn Leadbetter

Division of Arts and Science, City University of Seattle

CPC 695: Counselling Psychology Research Project

Dr. Karin Coles

December 13, 2021

## **Internet Gaming as a Behavioral Addiction in Adolescents**

In 2020, the number of Canadians who played video games was estimated to be 23 million, or about 61% of the population (Entertainment Software Association of Canada, 2020). Of those playing video games, 89% were identified as children and youth ages 6-17, with the average age being 12 years old and the average playing time 12 hours per week. Since the COVID-19 pandemic, the Entertainment Software Association of Canada (2020) reported that 80% of teens are playing video games more often than pre-pandemic. Many of these teens reported playing video games to be a positive experience, making them feel better mentally. These findings resulted from conducting 15-minute surveys of adults and children in Canada who played video games in the previous 4 weeks. Gaming was considered a positive experience as participants had a relaxing and enjoyable activity to engage in while quarantined at home. Furthermore, gaming allowed teens to connect with friends and family without leaving home. Although videogame playing can provide positive experiences, it is also essential to consider the trajectory of video game use for each individual, along with concerns for overuse of video games and subsequent potential impact on adolescents.

This research project explores the following questions:

1. How is Internet Gaming Disorder (IGD) assessed?
2. How is IGD treated and, is treatment related to how it has been defined and assessed?

First, this paper will introduce a conceptualization of internet gaming disorder (IGD) and present a self-positioning statement. The literature review will explore the identified research questions by discussing IGD assessment as it has developed over time together with addiction models to promote understanding of IGD. The cyclical relationship between IGD and coping or contributing factors and effects of IGD for adolescents, and the roles of family attachment,

disconnection, and escapism are topics further discussed. Treatment approaches such as Cognitive Behavioural Therapy (CBT), Emotion-Focused Therapy (EFT), and family-based treatment will be reviewed, along with the efficacy of such therapies. Then implications for counselling psychology in assessing, diagnosing, and treating IGD in adolescents are presented. The manuscript concludes with a self-reflexive statement.

### **Internet Gaming Disorder and Adolescents**

As technology and accessibility to gaming platforms continues to increase, so to does the concern for impact on adolescent mental health and well-being. One of the earliest studies to research video game addictions is the McClure and Mears (1984) study which aimed to examine the difference in age, gender, and reasons for playing video games. The overall focus of this particular study was on understanding the increasing rise of computer and video game use during the 1980s. As the internet and gaming continue to develop and become more accessible and widespread, so does the concern for pathological and excessive use. Tereshchenko and Kasparov (2019) also acknowledged the continued rapid increase in internet and gaming use is now often being studied under the topic of addictions, particularly in adolescents. Such concern led to the American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5) to propose inclusion of internet gaming disorder (IGD) in future versions, as well as the inclusion of gaming disorder (GD) in The World Health Organization's (2020) *International Statistical Classification of Diseases and Related Health Problems* (11th ed.; ICD-11) (Sugaya et al., 2019). The DSM-5 defines IGD as "persistent and recurrent use of the Internet to engage in games, often with other players, leading to clinically significant impairment or distress as indicated by five (or more) criteria in 12 months" (American Psychiatric Association, 2013, p. 795). The consideration of including IGD in the DSM-5 and

ICD-11 has led to extensive research on whether IGD is diagnosable and whether it should be included in future versions, indicating that the criteria for diagnosis and understanding for treatment are not yet well or fully understood (Zajac et al., 2017).

Rates of IGD are expected to increase for youth who evidence problematic gaming use. However, it is essential to note that as youth enter adolescence, their gaming and internet use is expected to increase as they age given that in adolescents aged 12-14 comparative to 10-year-old children access increases. Research highlights the importance of careful consideration of pathologizing in this developmental time (Wichstrøm et al., 2019) as gaming may be seen to increase with age rather than as a result of IGD. However, this trend can also occur in the opposite developmental direction, as individuals in early adolescence may show higher internet use ratings than in later adolescence. These results may reflect changes in maturity and self-regulation together with increased vulnerability of younger adolescents to addictive behaviors (Ballarotto et al., 2018). Taken together, this points to the importance of considering vulnerability in early adolescence as mental health challenges can impact the trajectory and development of IGD through to late adolescence and adulthood (Throuvala et al., 2019). Some mental health challenges that are contributing, or predisposing, factors for IGD include maladaptive coping (Benarous et al., 2019; Ju-Yu et al., 2019; Yen et al., 2109), depression (Dang et al., 2019; Kircaburun et al., 2019; & Liu et al., 2018), poor self-concept (Kim et al., 2018; Throuvala et al., 2019; Wei et al., 2020), and stress (Estevez et al., 2019; Yen et al., 2019; Wichstrøm et al., 2019). Furthermore, some of the effects associated with IGD include depression (Yen et al., 2019), anxiety (Hwang et al., 2020), stress (Estevez et al., 2019), cognitive function (Weinstein et al., 2017), self-concept (Kim et al., 2018), and replacement of basic needs (Yen et al., 2018).

Alongside IGD criteria for inclusion, addiction models play an important role in how IGD is defined and thus, treated. Addiction models used to conceptualize IGD and problematic gaming vary among viewpoints of behavioral addictions. The most prominent models in the existing literature used in this review to conceptualize IGD and IGD treatment include neurocognitive, psychodynamic, cognitive-behavioral, and biopsychosocial models. These models of addiction will be defined and discussed further within the following literature review section. Additionally, an attachment model which focuses on the roles of parents and family relationships, may capture important factors possibly contributing to, protecting against (Ballarotto et al., 2018; Hwang et al., 2020), and providing possible directions for treatment approaches for IGD (Sugaya et al., 2019). Addictive behaviors and attachment tend to be intersected by the importance of developing secure bonds early in childhood and throughout developmental years (Estevez et al., 2019). Attachment theory can thus play a significant role in the ongoing understanding of the development and maintenance of IGD, as Eichenberg et al. (2017) demonstrate its relation to the understanding of substance addictions through attachment experiences. Examining IGD through many viewpoints and lenses can better offer a more multi-faceted approach to understanding IGD in adolescents.

Treatment for IGD is based on the consideration that there are different levels of severity to consider in terms of problematic versus engaged gaming (Carras & Kardefelt-Winther, 2018). Treatment can be based on gaming as maladaptive coping in which CBT may benefit healthy coping strategies for depression and escapism (Ju-Yu et al., 2019), self-concept (Kim et al., 2018), and mindfulness (Kircaburun et al., 2019). CBT is an intervention that can provide a psychoeducational component to help individuals better understand coping patterns and alternative ways of thinking (Han et al., 2020). Emotion-Focused Therapy (EFT) may help treat

emotional dysfunction and regulation (Liu et al., 2018) and target depression and anxiety (Ju-Yu et al., 2018). EFT can do so by helping individuals understand and identify negative emotions which they can then learn to regulate (Yen et al., 2018). Family-based treatments are also explored to address family relationships, dysfunctions, and building reconnection (Lo et al., 2021).

The implications for discussing the definition, assessment, and treatment of IGD in adolescents will then determine how the research impacts the field of counselling psychology. Furthermore, this discussion will lead to acknowledging further research that needs to be done for IGD to be further understood. Based on the existing research, practice recommendations will be provided to discuss utilizing current understandings of IGD and IGD treatment.

### **Self-Positioning Statement**

As I approach this research topic, there are many areas where my personal biases may influence the research. One example of my personal bias is pathologizing gaming behaviors that may be more attributable to normal gaming behaviors. Therefore, what may be pathologized as problematic gaming and IGD, may merely be a healthy adolescent that spends more time gaming than the average adolescent and does not require treatment. I believe that video gaming can be over-pathologized, which means to over-identify a symptom as a disorder or disease instead of considering a behaviour normal. This may be possible because of videogaming's prevalence and popularity among teens. This bias comes from having seen individuals play video games to the extent of fitting some of the IGD diagnoses criteria yet not presenting as needing treatment or intervention because of it. In the current research, there are still many tools and resources evolving and being tested to measure and assess IGD, such as diagnostic criteria in the DSM-5 versus the criteria in ICD-11, which has a higher severity threshold than the DSM-5 (Ko et al.,

2020). The adequacy and depth of research into IGD are still coming to light. It can be dangerous to include in future revisions of the DSM-5 and ICD-11 before therapeutic resources and interventions have caught up and been researched enough to determine efficacy (Przybylski et al., 2016). Weinstein et al. (2017) looked at the effects of IGD longitudinally and did not find any effects on health over time. Further, Weinstein et al. (2017) believe that although this is not in line with other research, as many points to the conclusion that there are effects on health, it is still too soon to determine the management of IGD by comparing it to substance use disorders. Further investigation is needed before including IGD in future versions of the DSM and ICD-11.

Excessive gaming that impedes the functioning of daily living and well-being of adolescents demands the attention of practitioners to provide appropriate treatment (Carras & Karedfelt-Winther, 2018). It will be vital to mitigate this bias by remaining open-minded in understanding IGD from multiple lenses by examining its usefulness as a diagnosis and the dangers of pathologizing. Practitioners can thus begin to utilize findings as they continue to emerge by adapting a well-rounded understanding of the etiology and characteristics of IGD.

My personal view of IGD sits within a psychodynamic model, which sees the problem of excessive gaming as a failed solution for problems in other areas of life (i.e., coping) rather than as an addiction (Essig, 2012). Essig (2012) highlights that this point of view encompasses understanding the underlying conditions and problems that require treatment, including pre-existing anxiety and depression, social skills, isolation, self-esteem, and attachment or family dysfunctions. It is possible that gaming begins as a fun activity but becomes an addiction or a problem only after it becomes a coping strategy. Therefore, my beliefs sit within the foundation that IGD results from coping behaviors enacted to manage difficulties in other areas of life.

By taking a biopsychosocial approach, which considers the interactions between social, biological, and psychological factors, this bias can be mitigated with a more holistic and broader understanding of IGD. This can be evaluated from the perspective of what is known as the component model of addiction treatment (CMAT) (Kim & Hodgins, 2018). Kim and Hodgins (2018) use CMAT to demonstrate a model that encompasses a link between psychological, neurobiological, and cognitive components found in all addictions and should be addressed to different degrees for the most effective treatment. By taking the perspective of a biopsychosocial model or CMAT approach, it is possible to consider the interplay of characteristics for IGD rather than limiting the understanding to one point of view.

A common bias is that IGD is far more prevalent in males than females when in fact, it has been found that research tends to vary on this matter. Males being more likely to develop IGD is my bias because my exposure to those who game excessively includes males exclusively. Sugaya et al. (2019) found that adolescent males account for 15.4% of individuals with problematic video gaming compared to only 3% in all other age and gender groups. However, Ballarotto et al. (2018) point out that girls scored higher in problematic internet use while highlighting that girls are also more susceptible to developing maladaptive psychological profiles, including internalizing, which is often a characteristic of boys regarding IGD. Karaer and Akdemir (2019) also found that 28% of girls and 19% of boys were diagnosed with internet addiction. Possible reasons are that girls are more likely to present with psychopathologies and thus are more likely to be admitted to outpatient care which was the sample population. It is important in this research process to be mindful of the gender differences in diagnosis, presenting concerns, and treatment to benefit the generalizability of IGD beyond males. Other demographics such as race, ethnicity, and transgendered youth may be beneficial in better

understanding the scope of IGD. However, examination of these demographics are beyond the scope of this paper.

It is also my bias that IGD is best understood and treated through the lens of family-based treatments, which focus on the role of the family system and attachment in IGD. This bias comes from the same bias adopted by the psychodynamic model of addiction, which emphasizes coping, avoidance, social connection, and attachment as being related to the development of IGD (Estevez et al., 2019). These factors play an important role in adolescents' development and thus developing coping strategies and problematic behavior.

Cognitive-behavioral therapy (CBT) and cognitive-behavioral therapy for internet addiction (CBT-IA) have also been identified as treatment options for IGD. Because of their focus on the individual adolescent needs surrounding coping strategies, managing stress, mindfulness, and replacing escapism behaviors (Ju-Yu et al., 2018). However, my bias towards identifying and exploring these interventions comes primarily from the lack of research in other areas and the emphasis on specifically CBT (Curtis et al., 2017; González-Bueso et al., 2018; Sugaya et al., 2019; Young & Brand, 2017) and family-based treatment (Hwang et al., 2020; Lo et al., 2021; Sugaya et al., 2019; Zajac et al., 2017). One way to mitigate these biases is to focus this research on what is available and further the understanding of the efficacy of CBT as individual treatment. It will also be helpful to consider that family treatment is studied widely, but the many variants of family treatment require further research. Another way to address this is to explore the possibility of individual versus family therapy and potentially combine individual and family interventions to provide insight into different treatment approaches. The hope is that the current comprehensive literature review will add to the existing literature and further understand IGD from differing perspectives.

To maintain awareness of all these biases, it is vital to research the topic of video game behavior from multiple perspectives and understandings, rather than simply as an addiction or as individual versus familial. There exists a risk of positioning myself to see only one side of a multi-faceted and not fully understood topic, potentially implying that only specific outcomes can be accurate (Kardefelt-winter, 2017). How this research is positioned determines how practitioners view and interact with the information extracted from it and how it will be applied to conceptualize and treat IGD with appropriate interventions (Kardefelt-Winther, 2017). It is important to explore many different avenues and perspectives of conceptualizing and potentially treating IGD.

### **Literature Review**

This comprehensive review of the literature will examine how IGD is assessed and explore IGD through different addiction models. These include models such as neurocognitive, psychodynamic, cognitive-behavioral, and biopsychosocial. Alongside that, it will take a further look into whether coping or addiction came first in the development of IGD with the hope of giving a broader understanding of possible predispositions and contributing factors. Factors impacting individuals with IGD and their families will become an essential part of understanding the family systems' role in developing and treating IGD. Disconnection in family and social life also plays a significant role (Hyunchan et al., 2020) and will help explain the notion of coping and escapism that is often attached to IGD (Moge & Romano, 2020; Yen et al., 2019). This information will help guide further understanding of individual and family-based treatment interventions for adolescents with IGD.

### **IGD Assessment**

One of the significant concerns with diagnosing IGD concerns over-pathologizing what may be excessive or engaged gaming rather than a problematic addiction (Moge & Romano, 2020). This idea may lead to inappropriate diagnoses and treatment in future adolescents. As assessment and diagnostic criteria are still being examined, it is essential to consider that this area requires further investigation. *Addictive behavior* is defined by Estevez et al. (2019) as matching all the six core components that define addiction and include salience, mood modification, relapse, withdrawal, conflict, and tolerance. The definition of IGD also builds off this foundation, and ICD-11 defines it as; individuals lacking control over gaming behavior, gaming taking priority over other activities, and a persistent pattern of consequences; to make a positive diagnosis, all three of the above criteria must be present and for at least 12-months (World Health Organization, 2020).

To examine and test the proposed criteria for a DSM-5 diagnosis of IGD, Ko et al. (2020) developed a semi-structured interview for each criterion, including preoccupation, withdrawal, tolerance, loss of control, loss of interest, consequences, deception, escapism, and functional impairment. What was found is that all criteria except for escapism and deception reached diagnostic accuracy for gamers with IGD compared to regular gamers. It is worth noting, however, that this was only tested in adult participants. When tested in a group of adolescent gamers by Carras and Kardefelt-Winther (2018), gamers were separated into two groups - concerned or engaged gamers - to differentiate problematic from regular gaming. Carras and Kardefelt-Winther (2018) found with ICD-11 criteria was that current IGD criteria may help determine extreme cases of IGD. However, this may also include a group of engaged gamers who reported slightly under normative gamers and were still considered at risk for IGD. The concerned group of gamers did not meet the criteria for diagnosis but reported experiencing

various gaming-related life problems, which speaks to the potential for incorrect labeling and diagnosing individuals on either side of the spectrum. This study is an example of the importance of determining interventions based on the diagnosis of IGD because if a severe group receives treatment to target moderation, this would be appropriate. However, a less severe group may already be gaming in moderation, serving them a useful function. If this group enters intervention that moderates gaming further, it may be inappropriate to do so (Carras & Karedfelt-Winther, 2018).

Király et al. (2019) also aimed to determine the accuracy of IGD criteria; however, they did so by testing a Ten-Item Internet Gaming Disorder Test (IGDT-10) to assess IGD across languages (English, French, Czech, Hungarian, Persian, Norwegian, and Spanish). Király et al. (2019) found that the IDGT-10 proved suitable for measuring IGD in all languages and genders. More tests must continue to be researched to determine the validity and suitability of the inclusion of IGD's diagnostic criteria. The variability currently exists in assessing IGD points to the significant concerns and debates of the inclusion of IGD in DSM-5 and ICD-11 for concerns that there is not enough consensus on defining criteria and symptoms (Zajac et al., 2017).

### **Addiction Models**

Addiction treatment is often viewed through different models of addiction. The chosen viewpoint, or conceptualization of the addiction model, is essential in determining how to conceptualize and treat addiction. Alternative models of addiction relating to IGD include neurocognitive and cognitive-behavioral models that attempt to explain IGD's behavioral components. The neurocognitive model described by Wei et al. (2017) views IGD as occurring through three brain systems. These include the impulsive system, reflective system, and interoceptive awareness system. These are thus seen as mediating habitual behaviors, predicting

and exerting inhibitory control over behaviors, and generating a state of craving and drive, respectively. Therefore, this theory holds that the brain system is heavily involved in developing and maintaining IGD. However, A cognitive-behavioral model is a newer model that has been attached to IGD, implying that coping and willpower are the main characteristics that play a role in the development and maintenance of IGD, having to do primarily with self-regulation (Kaliszewska-Czeremska, 2011). Therefore, excessive internet use is a leading cause for IGD, based on these findings.

Viewing IGD through a neurocognitive model of addiction, Wei et al. (2017) have identified increased automatic motivational responses as a contributing factor to continuous game playing due to an imbalance in lowered effective impulse control and self-reflective processes. This is also influenced by abnormal interoceptive awareness processes, which is the inability to recognize and respond to internal signals provided by the body. When this becomes impaired, it can lead to IGD by ignoring the negative consequences of excessive game playing. Wie et al. (2017) contend that a process model, the Interaction of Person Affect Cognition Execution (I-PACE), suggests that increased exposure to addiction-related cues results in addiction and cognitive, affective, and personal deficits and execution, which aligns with the neurocognitive model. Also examining the use of the I-PACE model, Young and Brand (2017) explained IGD symptoms by examining reduced executive functioning and decision-making. This model can be broken down into three stages: healthy internet use, development and maintenance of general internet use, and mechanisms of specific internet use (IGD). Ultimately, this model may be used to determine the maintenance and development of IGD and other internet disorders (Young & Brand, 2017).

The psychodynamic model, a model based on childhood experiences that have impacted adolescent and adult lives, supposes that pre-existing problems and coping alleviate through addictive behaviors (Essig, 2012). This means that individuals with IGD may have underlying or predisposing concerns in which they turn to video games to avoid or to cope with feelings of stress and pressures of daily living. Individuals with problematic gaming have resorted to avoidance and coping strategies to compensate for psychosocial problems and the inability to cope with stress (Estevez et al., 2019). The psychodynamic model can also be analogous to a biaxial model wherein symptom, and problem criteria are emphasized, and the focus is on stress and coping (Carras & Karedfelt-Winther, 2018).

In the cognitive-behavioral model, Beck (1993) defines the problem as created by specific beliefs which are incorporated into schemata. This creates biased information processing which then results in dysfunctional behaviour and significant distress. Therefore, dysfunctional beliefs lead to dysfunctional behaviors. Furthermore, Kaliszewska-Czeremska (2011) describes IGD as the impulse of disrupted habit and drive control. Kaliszewska-Czeremska's (2011) study emphasizes cognitive dysfunctions that result in individuals with IGD having negative beliefs about themselves, their environment, and their relations to the environment. It is also posited that individuals with IGD have deficits in self-regulation as they may use the internet to procrastinate or delay the completion of other tasks or as a form of mood regulation. The same study suggested that internet and gaming use is not the main problem but instead provokes dysfunctional behaviors in individuals where problem behavior is predisposed (Kaliszewska-Czeremska, 2011).

In the biopsychosocial model of addiction, all other models are true to some degree, and approaching IGD and treatment may require examining all facets of life. A transdiagnostic

treatment model, also known as the component model of addiction (CMAT), looks at the similarities of substance use addictions and behavioral addictions (Kim & Hodgins, 2018). This model is useful in examining the different contributing factors of other models and approaches to addiction to provide a holistic view. Sugaya et al. (2019) found that genetics, cognitive brain function, environment, family, and pre-existing factors could all play a role in the vulnerability to IGD in adolescents. Therefore, conceptualizing IGD through a more holistic approach provides a more in-depth understanding of all aspects of IGD and does not limit it to one facet.

### **Addiction or Coping**

The classic debate of what came first, addiction or coping, is at the forefront of IGD literature in determining its etiology and potential for treatment (Bueso et al., 2018; Estevez et al., 2019; González- Hwang et al., 2020; Moge & Romano, 2020; Yen et al., 2019). IGD as a coping mechanism is associated with behavioral addictions related to self-blame, social withdrawal, and avoidance (Estevez et al., 2019). Hwang et al. (2020) also identified that games might be used as coping but perhaps in a beneficial way, giving the example of individuals with attention deficit hyperactivity disorder (ADHD) who may use gaming to concentrate and focus their attention. Coping may be an important and prominent factor in IGD conceptualization. It would aid the implementation of interventions for IGD with the understanding that coping may play a role in the development and maintenance of IGD (Moge & Romano, 2020). IGD is more than just a symptom of underlying psychological conditions and may otherwise be a coping strategy for said conditions (González-Bueso et al., 2018).

A bidirectional approach to this debate would include the view of IGD and coping as a cyclic relationship. IGD and depression have a bidirectional relationship in that depression is the result of IGD and IGD leads to further psychosocial stress, feeding into the depression (Ju-Yu et

al., 2019). It was also found by Yen et al. (2019) that coping may be a precursor to IGD, stating that individuals may use gaming to escape; however, highlighting that gaming used as a coping mechanism may also lead to further problems in the psychosocial domain. This is important to note as a cycle can begin to occur in which gaming is used to cope, and gaming leads to further problems with which coping is needed. Liu et al. (2018) found that depression and coping existed in a bidirectional relationship over four years. Therefore, the two influenced each other reciprocally. This bidirectional relationship was also a possible result of coping with emotional distress and depression induced by prolonged gaming or social withdrawal (Lio et al., 2018).

### **Contributing Factors and Predispositions**

If coping is one of the main contributors to IGD, what adolescents are coping with becomes an important topic, especially in considering treatment options and approaches. Some key components in the literature speak to the role of depression (Dang et al., 2019; Kircaburun et al., 2019; Liu et al., 2018), stress (Yen et al., 2019; Wichstrøm et al., 2019), and self-concept (Kim et al., 2018; Throuvala et al., 2019; Wei et al., 2020). Depression appears most significantly throughout IGD, stating that not only is depression correlated with IGD (Liu et al., 2018), but it can also predict IGD (Dang et al., 2019). Dang et al. (2019) found that factors such as coping ability and emotional intelligence can be protective in the development of IGD, which is essential in understanding IGD from a preventative standpoint and a treatment standpoint. Kircaburun et al. (2019) found that depression was so strongly associated with IGD that it overrode other psychological problems, highlighting the critical role of depression in developing IGD.

Stress has also been found to play a significant role in the development of IGD, as indicated by Yen et al. (2018), stating that individuals with IGD show lower levels of resilience

and higher levels of perceived stress. Thus, stress and resilience are directly linked to IGD and play a role in influencing IGD, indicating different target areas for prevention. The same study also found that suppressing negative emotions could result in unresolved emotions and, thus, lower cognitive appraisal, which may account for depression susceptibility.

Self-concept is another essential piece contributing to IGD in various ways. For example, dissatisfaction with one's own psychological needs has been associated with IGD, as well, the degree to which one is dissatisfied correlates with the degree of IGD severity (Kim et al., 2018). Using a basic psychological needs scale (BPNS), Kim et al. (2018) found that those with lower BPNS scores experienced self-image problems and rated their self-concept negatively. Poor self-concept not only contributes to the development of IGD but also maintains it. This was shown in a study by Kim et al. (2018) looking at individuals with IGD compared to healthy controls who did not meet DSM-5 criteria for IGD. Kim et al. (2018) found that those with IGD had a distorted self-concept and self-evaluation. This finding adds that those with IGD having a negative view of their self-concept will also experience difficulties regulating emotions. These findings point to the correlation of self-concept and IGD, which may be important contributing factors to IGD when considering treatment. Determining a pathway to lowered self-concept and IGD, Throuvala et al. (2019) propose that a parent-child relationship may lead to lowered self-concept, leading to addictive behavior, thus IGD, which ultimately highlights a systems approach to understanding the path to IGD. Systems can be used to understand the development and maintenance of IGD through parental relationships and risk factors associated with attachment and predict IGD (Wei et al., 2020).

### **Effects of IGD on Adolescents**

In line with factors contributing to IGD, it is also essential to consider the psychological and mental health symptoms that persist or are maintained by IGD and affect adolescents in various ways. Stages of development are important to consider when looking at the effects of IGD. It has been found that depression, hostility, and obsession-compulsivity are higher in older adolescents than younger adolescents (Ballarotto et al., (2018). Ballarotto et al. (2018) separated participants into three stages of development consisting of early adolescence (ages 12-14 years), middle adolescence (ages 15-17 years), and late adolescence (ages 17-20 years). Because in early adolescence, puberty is prominent, and physical and emotional changes are increased. In middle adolescence, separation from parents occurs, and new peer and extrafamilial relationships become significant. In late adolescence, many aspects of identity are being formed and defined. This is indicative of the developmental factors of the individual that are important to consider when examining the progression of IGD and worsening symptoms.

Other research has found correlations with IGD symptoms and many other psychological concerns (Ballarotto et al., 2018; Hwang et al., 2020; Hyunchan et al., 2020; Ju-Yu et al., 2019; Kircaburun et al., 2019; Moge & Romano, 2020; Yen et al., 2019). As previously mentioned, depression has a significant correlation with IGD, and its role in maintaining IGD is equally important. Yen et al. (2019) argue that depression is a contributing factor and plays a role in mediating the correlation between IGD, resilience, and perceived stress. Moge and Romano (2020) also found that depression was one of the highest outcomes for symptoms of IGD, followed closely by anxiety and stress. This is also echoed by Hwang et al. (2020) findings that IGD often causes the comorbidity of depression, anxiety, and stress. Individuals with IGD have a lower cognitive appraisal and higher emotional suppression, which maintains these factors and plays a role in levels of resilience that have higher levels of perceived stress (Ju-Yu et al., 2018).

Alternatively, Wichstrøm et al. (2019) found in their study that depression and other psychological factors were not significantly correlated with symptoms of IGD, as proposed by the DSM-5 criteria. However, this study was conducted on 10-year-old Norwegian children, which may impact the generalizability of lower mental health problems in Norwegian children compared to children and adolescents in Western countries. It may also be the case that depression and other psychiatric disorders were not predictors or consequences of IGD because of the small population sample in this study.

Whether adolescents' needs are being met psychologically and emotionally can be determined by the state of their cognitive functioning and self-concept (Weinstein et al., 2017). If these basic needs are not being met, excessive gaming can replace these needs and contribute to the problem by maintaining unhealthy cognitive appraisal. This can be lower in adolescents with IGD (Yen et al., 2018) and can further interfere with satisfying basic needs when adolescents are no longer pursuing life goals. Without adequate reappraisal, depression is potentially heightened, and negative emotions become further suppressed and, thus, unresolved (Ju-Yu et al., 2018). This is detrimental to adolescents' well-being and results in the inability to identify and manage difficult emotions and behaviors in response to negative experiences (Karaer & Akdemir, 2019).

Excessive and persistent use of internet gaming can lead to many difficulties and mental health challenges, especially in the developmental years of adolescent brains (Sugaya et al., 2019), indicating that early intervention and prevention are essential. With challenges in emotion regulation and expression, social support and parental involvement become increasingly important as a correlation has been found between parents providing acceptance, support, and emotional availability and maintaining IGD (Karaer & Akdemir, 2019). Furthermore, abnormal

brain function found in the prefrontal cortex and striatum that are associated with impaired cognitive control, may result from IGD and lead to heightened vulnerability of these adolescents, and even maintain unhealthy symptoms of IGD (Sugaya et al., 2019).

### **Family Attachment**

The role of the family is becoming increasingly recognized as playing a significant role in IGD. Lack of self-efficacy, self-concept, and self-perception reflects childhood vulnerabilities in which lack of secure bonds and trust lead to challenges in peer and social relationships. These challenges involve dissociation and escapism behaviors to compensate for the basic needs of security, worthiness, and trust being unmet early on (Throuvala et al., 2019). Another explanation for the role of parents and attachment is the idea of parental warmth, which is described as an attachment figure that provides the child with a positively recollected emotional bond. In contrast, lack of warmth reflects an attachment figure that does not provide the child with emotional availability and support (Throuvala et al., 2019). Emotional warmth is also determined by the mother's and father's acceptance or rejection, with rejection being highly correlated to over-protective parenting and, thus, lack of emotional warmth (Chen et al., 2020). Adolescents that cannot find acceptance, parental warmth, emotional availability, and attention from their parents or families are more likely to take to the internet or video games to fill this gap (Karaer & Akdemir, 2019).

Furthermore, emotional warmth was low in adolescents with IGD, indicating support for the notion that parental warmth may be a predictive and preventive factor of IGD. At the same time, rejection and over-protective parenting may be risk factors (Chen et al., 2020). Li et al. (2019) add that there are three basic needs of autonomy, relatedness, and competence, that if not met, will also turn adolescents towards gaming to meet these needs. Having these needs met

involves parents providing parental monitoring to stay informed about what their children are doing, where they are, and who they are with. This can help children build a supported path of development and further build their autonomy. It is suggested that parental care such as warmth, responding to needs, and cultivating positive shared emotions can help fulfill relatedness needs. Lastly, a sense of competence can be bolstered by parents passing a sense of learning and knowledge about alternative activities to gaming (Li et al., 2019).

The above findings speak to the importance of parenting styles and the quality of parent-child relationships in protecting and contributing to adolescents developing IGD (Karaer & Akdemir, 2019). Therefore, by strengthening these relationships and overall family functioning, children can also improve in other settings, which will help prevent gaming addiction (Li et al., 2019). Li et al. (2019) also posit that treatment promoting the mitigation of gaming disorder symptoms should focus on individual and family-level interventions. Looking at stressful events occurring within the family is an important tool in determining susceptibility to developing IGD. Maya et al. (2018) pointed out the prevalence of family stressors in adolescents with IGD. Family stressors such as frequent interparental conflict correlate with the likeliness that the adolescents will develop IGD. The more adolescents are exposed to interparental conflict, the more they absorb and internalize the conflict (Wei et al., 2020). Moreover, this internalization may eventually lead to the deterioration of the parent-child relationship, resulting in insecure attachment. Thus, compensating behaviors such as excessive internet gaming begin to develop into IGD (Wei et al., 2020).

### **Disconnection**

It is apparent that adolescents may experience mental health consequences and challenges with IGD and that the family may play a significant role in the development and maintenance of

IGD. However, what often goes unrecognized is the impact IGD has on the family and caregivers who bear a heavy responsibility for these adolescents, making support a difficult task (Markoulakis et al., 2020). Adolescents with IGD who perceive their relationships with their families as poor also showed more problematic gaming than those who did not, indicating that poorer perceived family relationships correlate with the severity of IGD (Hwang et al., 2020). Hyunchan et al. (2020) found similar results that lower family cohesion correlated with lower feelings of support from the family.

In terms of overall social support, research has indicated additional factors to, and impacted by, family disconnection. Sugaya et al. (2019) found that disconnection in families can also result in disconnection from social contact and supports. Furthermore, these authors posit that the inability to grow and develop in microsystems (school, family, peers) can result in poor growth and development in other systems, heightening the potential for problem behaviors such as excessive gaming. Depression has also been linked with low perceived social support experienced by adolescents in their lives outside of gaming (Moge & Romano, 2020). These psychosocial factors are often seen in adolescents with IGD (Yen et al., 2018), along with insecure feelings experienced in peer relationships (González-Bueso et al., 2018). González-Bueso et al. (2018) demonstrates that this could be because compared to healthy controls, those with IGD score higher in introversion, identity concerns, and less self-value on the Egotistic personality scale.

Peer and social connections are essential in ensuring that adolescents do not feel alone, as this can inhibit their self-esteem; adolescents with IGD have been found to have lower support from their peers (Karaer & Akdemir, 2019). In the same study, it was found that adolescents with lower peer support turned to gaming to find alternative social interaction and relationships.

Given that internet and gaming may provide adolescents with social support that they lack in their daily lives offline, Weinstein et al. (2017) found that most adolescents experience more peer connection through technology than other means. Kaliszewska-Czeremska (2011) adds that social support is often most received online, which poses challenges in comparing online and offline social support to determine if decreased offline support is the cause or effect of increased online social interaction. Ultimately, the gap in current research is the significant impact of disconnection between these adolescents, their families, and the social world.

### **Coping and Escapism**

There are some benefits to video games and coping. Some individuals with ADHD have been found to use gaming to cope with difficulties concentrating because it allows them to focus their attention better (Hyunchan et al., 2020). For adolescents that do not reach a level of excessive and harmful gaming, gaming can be beneficial in reducing depression by allowing a space for social connection and opportunities for friendships (Carras & Karedfelt-Winther, 2018). Another potential benefit is that the internet is an easily accessible platform for adolescents seeking emotional security. However, it can be harmful to those with less self-control and are easily pulled out of a healthy use balance (Wei et al., 2020). Thus, coping via the internet and video games can be healthy to a point. The negative consequences surface for those with a distorted sense of self and difficulties with emotion regulation. These make adolescents vulnerable to the pull of perceived benefits and unsuccessful coping (Dang et al., 2019). An example of unsuccessful coping would include avoidant coping styles that provide an escape in an ineffective attempt to self-regulate in stressful situations (Dang et al., 2019). Kim et al. (2018) add that these adolescents should be wary of perceiving that these coping strategies will benefit feelings of autonomy, competency, and successful online relationships. Furthermore, Yen et al.

(2019) ascertain that addictive behaviors usually begin as maladaptive coping responses to stress.

The concept of escapism has been closely linked with coping. It shares the intention of avoidant behavior and creates a diversion for the mind from unwanted or negative emotions and stressors (Moge & Romano, 2020). Because the internet can provide an online world separate from the real world, this provides a tangible destination for people to escape from emotional difficulties, and Yen et al. (2018) found that this may be the primary reason adolescents with IGD use gaming as a form of escapism. The prevalence of gaming to escape or cope with negative and unwanted emotions was also found in individuals meeting the criteria for a DSM-5 diagnosis of IGD. Those who play video games but do not meet the criteria (Wichstrøm et al., 2019). Therefore, it is important to consider the role of escapism and avoidant coping in adolescents with IGD. These may be essential factors to consider in conceptualizing the development and treatment of IGD.

### **Treatment**

An important consideration in treating IGD in adolescents is that IGD is still under review for future revisions of the DSM-5 and ICD-11, so treatment and interventions should focus on the client's presenting symptoms. Carras and Kardefelt-Winther (2018) point out that interventions intended to cease or reduce gaming could be harmful to adolescents who use gaming as a healthy and balanced coping mechanism. Furthermore, Carras and Kardefelt-Winther (2018) found that there are different levels of gaming to consider. For example, engaged gamers that do not play to excessive extents meet the criteria for being at risk of IGD and may be treated by reducing or limiting gaming. In doing so, this could take away a healthy coping tool for them without addressing their reasons for coping in the first place. Thus, targeting and

limiting gaming use may not be an appropriate intervention for these gamers who meet the psychological criteria of IGD more than the excessive gaming criteria.

### **Cognitive-behavioral Therapy**

Cognitive-behavioral therapy (CBT) has been identified as a treatment option for adolescents with IGD because of its focus on coping strategies and mindfulness, which can benefit aspects of escapism and depression (Ju-Yu et al., 2019). Another stream of CBT is CBT for internet addiction (CBT-IA) which focuses on modifying behavior, cognitive restructuring, and reducing harm (Young & Brand, 2017). This would be beneficial in addressing maladaptive coping (Yen et al., 2019) and cognitive functions such as self-concept (Kim et al., 2018). Online gaming disturbing executive functioning is also an area where CBT can help promote behavioral and cognitive control related to cravings (Sugaya et al., 2019). Concerning CBT, mindfulness-based interventions have also been studied and shown to positively affect IGD symptoms (Kircaburun et al., 2019). Mindfulness interventions can be beneficial in providing awareness for behaviours, increasing ability to cope with negative states and with cravings, as well as providing a means of reducing stress and avoidant behaviours (Li et al., 2017). However, it is important to consider that although CBT interventions have been studied and shown success, early and preventative measures should be prioritized, as efficacy for IGD treatment in CBT or otherwise is still under examination and requires more research (Sugaya et al., 2019).

### **Emotion-focused Therapy**

Emotion-focused therapy could also target emotional dysfunction and depression as these are critical factors in treating addictions and should be strongly considered in IGD treatment (Liu et al., 2018). For adolescents with IGD, it is important to assess emotional regulation and focus on awareness, regulation carefully, and finding alternative emotions to help adolescents

understand and modify thoughts, beliefs, and behaviors as emotional situations arise (Yen et al., 2018). Yen et al. (2018) also suggested emotion-focused therapy to target cognitive reappraisal and emotional suppression in adolescents with IGD to give them the awareness of where their negative emotions come from. Furthermore, promoting the replacement of negative thinking with positive thinking and providing reappraisal tools will help tackle the prevalence of depression and anxiety associated with IGD (Ju-Yu et al., 2018).

### **Family-based Treatment**

Lo et al. (2021) suggest family therapy for IGD and maintain that it may be helpful to start with individual interventions within the family members to ensure that individual needs are being met so that the practitioner can build relationships with each member. This is helpful for when it is time to address the family environment and adjust it so that ruptures can be repaired and relationships within the family can begin to be reconnected. Dysfunctional relationships are strongly correlated with dysfunctional reward circuits within the adolescent with IGD, and family therapy may positively repair these dysfunctional relationships (Hwang et al., 2020). Sugaya et al. (2019) found that family therapy has also been supported as effective in making changes in brain activation responses to gaming through playing online games that provide cues and images of parental love. Furthermore, Sugaya et al. (2019) found that family cohesion plays a significant role in this process. This finding further assists the treatment of IGD symptoms in adolescents and mental health in parents. There have been many parallels made between IGD and substance use disorder in adolescents. Family therapy has been proven effective for treating substance use in adolescents. Thus, this bodes the possibility that evidence-based family treatment for substance use could be modelled for IGD (Zajac et al., 2017).

### **Family Treatment Interventions**

As previously mentioned, parental warmth plays a significant role in adolescents' development of self-concept and self-efficacy (Throuvala et al., 2019). Therefore, an intervention that targets parents providing warmth and acceptance can help parents and adolescents engage in time management with gaming while fostering autonomy and self-control (Chen et al., 2020). Parental involvement is also an essential factor in the treatment of IGD to mitigate attrition for adolescents in treatment. It has been found that more parental involvement correlates with a higher success rate of treatment completion and acts as a protective factor against behavioral and substance addictions (Uliaszek et al., 2019).

A unique treatment strategy for families of adolescents with IGD involves using games incorporated into therapy and based on a token economy under the foundation of CBT (Curtis et al., 2017). A token economy in this context consists of a caregiver matching the adolescents desired behaviours with a token that can be exchanged for a reward. Over time, the caregiver decreases tokens, causing the desired behaviour to occur more often in order to receive the tokens and thus, the primary reward (Curtis et al., 2017). Using this intervention, practitioners can be cognizant of both the positive and harmful use of video games, and adolescents can find power in using their knowledge of gaming. At the same time, parents can reinforce boundaries and structure within the family. This intervention will also allow practitioners and parents to utilize the adolescent's understanding of the virtual world and connect it with real-world accomplishments. Using CBT-based interventions in family therapy showed reducing IGD symptomology and promoting parental involvement and interest (González-Bueso et al., 2018).

Like CBT, mindfulness interventions that involved awareness of automatic and addictive behaviors, coping, reappraisal, awareness of cravings, stress reduction, reduction of suppression, and meditation could be used to accompany the metacognitive awareness necessary to self-

regulate (Li et al., 2017). Furthermore, providing awareness of consequences related to excessive gaming and how to cope using mindfulness has been beneficial in reducing cravings (Li et al., 2017).

Psychoeducation is an essential factor in family interventions and for IGD. Li et al. (2019) developed the Game Over Intervention to help educate parents on self-determination to help limit their children's gaming time. Over three months, parents of children in grades 4-6 recorded their children's gaming activity and when tasked to pay attention to the games that were being played, when, and for long to help monitor the behaviors. Over this time, parents also practiced parenting skills to help meet their children's basic needs. This intervention successfully provided psychoeducation for parents, reduced game play in adolescents with IGD, and reconnect parent-child relationships. Psychoeducation surrounding parenting strategies and encouraging communication among all family members can help adolescents become aware of their unfulfilled needs and provide the family with strategies to help fulfill these needs (Lo et al., 2021). Interventions that focus on the family and help identify the internal workings of attachment to encourage change within the family system are a significant first step in improving parent-child relationships (Throuvala et al., 2019) and promoting family and social reconnection. This can be accomplished by identifying and addressing internal attachment models such as insecurity and ambivalence to promote relation to others and create feelings of safety. Satisfying attachment needs also include increasing self-esteem and self-efficacy, finding alternative or additional coping tools, and developing interpersonal skills. The overarching goal of these interventions is to improve parent-child relationships through communication, rules, and self-regulation (Throuvala et al., 2019).

### **Efficacy**

Family-based interventions for IGD have been proposed to help prevent and treat symptoms of IGD while addressing the importance of parenting skills, improving parent-child relationships, and promoting support systems to help adolescents with IGD self-regulate and reduce symptoms (Karaer & Akdemir, 2019). One crucial factor for successful IGD interventions is promoting empowerment and re-education in parents to have appropriate expectations to set appropriate boundaries (Lo et al., 2021). Lo et al. (2021) also identified the importance of family involvement in therapy. Lack of emotional readiness may create barriers, parents may have their mental health challenges, and therefore practitioners should consider the emotional needs of parents equally to the adolescent of the parents. To this end, alliances in therapy between the family and the practitioner prove to be effective in helping engage family members in the proposed treatment. It is also wise to be cognizant of negative family interactions that may cause family involvement in treatment to be more harmful than helpful. Being aware of this may help the decision to continue with individual or family-based treatment (Lo et al., 2021).

Many treatment options for IGD have been discussed and weighed, including individual CBT, mindfulness, and family-based CBT and psychoeducation. Although, it is important to remember that IGD and any interventions associated with IGD are still in their infancy and require further research before any true efficacy can be found to treat IGD. To date, no evidence-based or efficacious treatments exist for the proposed diagnosis of IGD (Zajac et al., 2017).

### **Summary**

This comprehensive literature review identified the proposed IGD diagnostic criteria. Carrasand Kardefelt-Winther (2018) reveals a difference between what is considered problematic and healthy video game behaviours. These differences should be considered when diagnosing IGD as treatment approaches will differ depending on the level of excessive video game use and

on healthy vs. unhealthy coping behaviours. Although researchers have found accuracy in the generalizability of IGD criteria across languages and genders (Király et al., 2019), it is important to note that there still exists a great deal of variability in IGD assessment and criteria. This leads to the ongoing debate of whether IGD should be included in future revisions of the DSM-5 and ICD-11 for fear that a consensus has not been made on defining criteria and symptoms (Zajac et al., 2017).

In defining and understanding IGD, multiple addiction models were used to conceptualize IGD through different lenses. These included a neurocognitive model looking at the role of brain systems and the development and maintenance of IGD (Wei et al., 2020). A cognitive-behavioral model was also explored, identifying coping and willpower as critical factors in IGD, insisting that cognitive dysfunctions contribute to negative beliefs about the self and the environment, provoking dysfunctional behaviours such as excessive gaming (Kaliszewska-Czeremska, 2011). The psychodynamic model furthered the notion of coping with pre-existing problems and current stressors as the precursor to behavioral addictions such as IGD (Carras & Kardefelt-Winther, 2018). From a biopsychosocial lens, all models are true to some degree (Sugaya et al., 2019), and factors such as genetics, brain systems, environments, family, and pre-existing factors play into adolescents' development and maintenance of IGD.

Excessive internet gaming as a coping mechanism has been identified as a significant factor in IGD (Estevez et al., 2019; González-Bueso et al., 2018; Hwang et al., 2020; Moge & Romano, 2020; Yen et al., 2019). Gaming as coping can be a dysfunctional and avoidant behavior (Estevez et al., 2019), or it can be a valuable and positive coping behavior (Hwang et al., 2020). Some other key contributing factors include the role of depression (Dang et al., 2019; Kircaburun et al., 2019; Liu et al., 2018), stress (Wichstrøm et al., 2019; Yen et al., 2019), and

self-concept (Kim et al., 2018; Throuvala et al., 2019; Wei et al., 2020), which can be predispositions as well as contributing factors to IGD. Some factors that can be protective against these include coping ability and emotional intelligence, as these can help prevent and treat IGD (Dang et al., 2019).

The effects that IGD can have on adolescents can significantly impact developmental stages (Ballarato et al., 2018). Depression, anxiety, and stress tend to be comorbidly occurring conditions (Hwang et al., 2020; Moge & Romano, 2020) and are maintained by lower cognitive appraisal and higher emotional suppression (Ju-Yu et al., 2018). Other contributing factors include self-concept, which is relevant to whether adolescents' basic psychological needs – autonomy, competence, and relatedness – are being met. If not met, this may cause excessive gaming behaviors to replace these needs (Weinstein et al., 2019) and help maintain IGD (Kem et al., 2018). When used excessively, many mental health challenges and developmental barriers are associated with internet gaming (Sugaya et al., 2019).

Parenting and childhood experiences within the family serve as contributing and protective factors against the development of IGD. Family attachment and bonds have been found to play a role in IGD through self-efficacy, self-concept, and self-perception. A lack of secure bonds made in childhood can reflect challenges in peer and family relationships that result in behaviors such as escapism to replace basic needs of security and worthiness (Throuvala et al., 2019). If parents can not meet basic needs such as warmth, acceptance, and autonomy, adolescents may turn to behaviors such as excessive gaming to fill this gap and fulfill these needs (Karaer & Akdemir, 2019; Li et al., 2019).

Disconnection in peer and family relationships leads to lower support and, thus, is a significant contributor to the severity of IGD and problematic gaming behaviors (Hwang et al.,

2020; Hyunchan et al., 2020). Furthermore, lowered support exacerbates lowered growth in microsystems (Sugaya et al., 2019), and perceived social support is one of the important protective factors of IGD (Moge & Romano, 2020). In contrast, peer connection for adolescents is more often found through technology over other means (Weinstein et al., 2017). Therefore, social and familial connections impact adolescents and the unknown degree to which this impact has on adolescents is a gap in the literature that requires further investigation.

IGD treatment has been examined from multiple lenses to provide a well-rounded understanding of the existing interventions that are being looked at for efficacy. This includes CBT to target coping, mindfulness, escapism, and depression (Ju-Yu et al., 2019). Whereas cognitive-behaviour therapy for internet addiction (CBT-IA) focuses more specifically on modifying behaviors directly related to internet addiction by working to reduce symptoms and provide management of underlying factors that are contributing to internet addiction symptoms (Young & Brand, 2017), the areas of CBT require further research (Sugaya et al., 2019). Emotion-focused therapy targets emotional dysfunction and depression (Lui et al., 2018) and emotional suppression and replaces negative with positive thinking to promote awareness (Ju-Yu et al., 2019). Family-based treatments tackle the repair of dysfunctional relationships (Hwang et al., 2020), family cohesion (Sugaya et al., 2019) and have the potential to be modeled after effective family treatments for substance use (Zajac et al., 2017). Some family interventions promote positive parenting behaviors such as acceptance while encouraging autonomy and time management in adolescents (Chen et al., 2020; Uliaszek et al., 2019). These include adolescents identifying positive and maladaptive uses of video games and reinforcing boundaries and structure for parents (Curtis et al., 2017). Games are being incorporated into treatment strategies utilizing a token economy and CBT to provide teaching

opportunities. Psychoeducation for families can be an important factor in treating IGD (Li et al., 2019) and providing families an opportunity to recognize and address the internal working of attachment (Throuvala et al., 2019).

It is essential to be mindful that many of these interventions are still being tested for efficacy as IGD itself is still in its early stages of being understood. Further research is required to identify appropriate treatment options for the proposed diagnosis of IGD (Zajac et al., 2017). As research in this area continues to evolve, more longitudinal studies can be conducted to determine proposed treatment interventions' efficacy and long-term effects.

### **Implications for Counselling Psychology: Assessment, Diagnosis, and Treatment**

Internet gaming disorder (IGD) is a relatively new concept in the field of counselling psychology. However, IGD studies from the last three decades are present within the literature to understand its impact on the lives of its users. IGD began to be studied in 1995 after researchers identified losing control over internet use as impacting academics, jobs, finances, and relationships (Young & Brand, 2017). Outside of general internet use, one of the first studies looking at the impact of video game use was McClure and Mears (1984), which examined the reasons behind playing video games. They found that individuals who played often used gaming to escape pressures or because they enjoyed the game's challenge. Those who did not play often reasoned that they did not enjoy video games or found it fun but unnecessary. Current research studies (Carlisle et al., 2019; Moge & Romano, 2020) support this early assertion regarding the purpose of gaming behaviours. These emphasize the use of video game playing as a form of withdrawal coping, a diversion strategy to manage stress (Moge & Romano, 2020), achievement and immersion in fantasy, and avoidance of social pressures (Carlisle et al., 2019).

Video gaming as a frequent activity began to be recognized as a disorder comparable to pathological gambling and substance use disorders because of its core addictive symptoms and potential to be treated with abstinence (King et al., 2018). King et al. (2018) noted that gaming, gambling, and substance use shared the problematic similarities of impaired control, experiences of withdrawal, and tolerance. Problematic gaming being compared closely to problematic gambling has questioned the conceptual framework of problematic gaming in how it is assessed and treated (King et al., 2018). This continued questioning is necessary for establishing the confirmation of IGD as a severe condition eligible to be included in future revisions in the DSM. Because the conceptual framework for IGD was not well understood, comparing it to problematic gambling was a good starting point. However, the comparison of gaming to gambling prompted further research that pushed researchers to further examine IGD from a perspective of a unique standalone diagnosis (King et al., 2018).

Due to the understanding of IGD through the lens of pathological gambling during the 1990s, IGD prevalence was likely over-identified in adolescents. The two were closely compared because pathological gambling was the first of any behavioural addictions to be considered a disorder in its own right. This over-identification may be due to invalid measures applied in the translation from pathological gambling to problematic gaming (Fam, 2018). Przybylski et al. (2016) found that the prevalence of IGD in young adults ages 18-24 resulted in lower estimates when based on the DSM-5 criteria. In contrast, comparatively, the only behavioural addiction in the DSM-5 (pathological gambling) showed higher prevalence rates. Thus, the authors concluded that gaming appears to be less dysregulating than gambling. However, when applying the DSM criteria of pathological gambling to problematic gaming, higher measures with larger confidence intervals (between 2.4% and 18.2%) can be found.

In comparison, alternative measurements, such as Problem Video Game Playing (PVP) scale and the game Addiction Scale (GAS) which were not used until the 2010's for IGD. These measurements produce less prevalence and smaller confidence intervals (between 2.9% and 5.4%), indicating an overestimation of IGD in adolescents in the 1990s (Fam, 2018). This data points to the importance of testing and developing independent measurements for IGD outside of the criteria for pathological gambling. Thus, resulting in more accurate and relevant data for the prevalence of IGD.

Another issue in defining the problem is the word "internet" in internet gaming disorder. Many studies are looking at IGD; however, there are blurred lines between internet addiction, gaming addiction, and internet gaming addiction. Internet addiction can include many different facets inclusive of gaming, online shopping, and social media use. Using gaming addiction terminology can be more specific to gaming behaviours, although this potentially leaves a gap between video games and other gaming behaviours. In internet gaming disorder, the defining factor is internet-based games that involve online interaction, limiting IGD to specific online behaviors and potentially excluding offline gaming behaviours. These offline gaming behaviors include games played on consoles, handheld devices, and phones, which are all prominent devices where problematic gaming can occur without using the internet or online interaction (Fam, 2018). This may be an essential consideration for the inclusion of IGD in future revisions of the DSM to clarify the differences and potential risks of problematic offline gaming behaviours.

### **Impact of IGD**

This research also has implications for recognizing the effects that IGD has on adolescents and their families. For adolescents, the significant findings indicate that depression (Yen et al.,

2019) and anxiety (Hwang et al., 2020) are two of the most significant factors that play a role in both the development and the outcome of IGD. Other significant effects of IGD include lower cognitive appraisal and resilience (Hang et al., 2020; Ju-Yu et al., 2019), a higher likelihood of suppressed emotions (Yen et al., 2019), and a negative view of self-concept (Kim et al., 2018). Recognizing these significant effects and contributing factors to IGD will help inform the course of treatment and whether to approach clients from a perspective of prevention or treatment based on their presenting symptoms or what they are more vulnerable to experience.

Effects of IGD on families have significant implications for the view of IGD as a familial issue outside of just an individual issue. Furthermore, introducing the family and attachment as a contributing factor and treatment option has significant implications for the field of counselling psychology in providing a potential factor in the development of IGD and an alternative treatment strategy that reaches beyond the individual. Developing parenting skills and focusing on the impact of the parent-child relationship is a recommended starting point for adolescents and their families to prevent and treat IGD (Karaer & Akdemir, 2019). Suppose adolescents' basic needs such as autonomy, competence, and relatedness are not met within their social or familial environment. In that case, the likelihood that they will turn to gaming to fulfill these needs is heightened by the act of turning to another environment to meet these needs (Li et al., 2019). What can help mitigate this is providing parents the opportunity to learn about positive parenting and help their adolescents feel that needs are being fulfilled in the home environment. It is also important to consider the fact that parents bear the burden of being responsible for the wellbeing of their children and could equally benefit from a family-based treatment that addresses the needs of the parents while also providing significant insight into the needs of their children (Markoulakis et al., 2020).

Disconnection is a significant effect linked to IGD in terms of development and repercussions. Recognizing the significant role of disconnection in IGD has been, and will continue to be, paramount in understanding the current era in which social connection for many individuals is strongly derived from online interactions and gaming. The impact this has includes less face-to-face interaction and support, which are significant buffers for stress and depression (Moge & Romano, 2020). It has also been found that self-esteem decreases with fewer friendships, introversion increases, identity concerns become prevalent, and adolescents place less value on themselves (González-Bueso et al., 2018). This shows that connection is an essential factor in the development of IGD in adolescents as there are many negative consequences to the disconnection that broadly impact adolescents' self-concepts. In recognizing these disconnections, treatment and preventive care can address the impact of disconnection and promote a healthy connection that can diminish the potential resulting psychological impacts. However, it is also important to note that there are implications that online social connection has positive effects on adolescents in providing a space for them that they may not otherwise be able to seek, which provides support or socialization under challenging times. There is also the potential that some games can provide promotion of physical activity as well as unique opportunities for socialization in-person (Weinstein et al., 2017). This has implications for ensuring that minimizing gaming or internet use does not also minimize access to healthy social supports. Furthermore, knowing whether a lack of social support offline is causing excessive gaming or is an effect of excessive gaming will help identify appropriate treatment (Kaliszewska-Czeremska, 2011).

### **Assessment and Diagnosis**

Implications for diagnosing IGD have been widely debated throughout IGD literature regarding the DSM-5 diagnostic criteria and its reliability and validity. By highlighting the current diagnostic criteria and the steps being taken to examine the efficacy of these criteria carefully, the hope is to contribute to a discussion about the importance of verifying and testing the diagnostic criteria before introducing IGD into future revisions of the DSM. It is important for assessment practitioners to conscientiously determine the role of IGD in considering if it is precipitated by existing mental health conditions or playing a role in causing further mental health conditions. The presenting symptoms can be very similar to other mental health conditions (Chen et al., 2018). This speaks to the importance of a differential diagnosis approach to the assessment of IGD. Thus, it will be important to determine a standardized scale as one component in the assessment process for IGD and addiction - related to online gaming - so that meaningful results can be compared across studies using the same scale (Chen et al., 2018). Continuing to further research in assessment scales for IGD will help determine consistency across studies so that accurate data can be pulled from results and compared to determine consistency in the diagnosis of IGD. Many different methods are being used to assess IGD, which causes an array of different results that are difficult to compare for consistency.

Considerations in creating standardized assessment tools and diagnostic criteria are essential to correctly identifying gamers that fall under problematic rather than non-problematic gaming. Moge and Romano (2020) point out concerns over pathologizing gamers that may be considered engaged rather than addicted, highlighting the difference between what is considered problematic comparative to healthy levels of gaming. Current IGD criteria may be successful in assisting clinicians in identifying extreme cases of problematic gaming. However, it is essential to consider engaged gamers who may meet some diagnostic criteria but not display problematic

characteristics (Carras et al., 2018). This is important for the field in considering treatment options that attempt to minimize gaming habits that may be useful for problematic gamers, but may detriment engaged gamers who use gaming as a healthy coping strategy to function (Carras et al., 2018).

Diagnosing IGD with the assessment tools that are currently available has not reached a point yet that allows consistency or dependency of results for practitioners. Thus, current assessment tools must be used with caution when interpreting results. This also has repercussions on the quality of treatment planning for clients presenting with problematic gaming habits. This can be resolved by identifying gaming habits and the social tendencies of gamers so that counsellors can begin to understand the client's situation better. By doing so, counsellors can be more informed and have a better idea of how to develop prevention and treatment plans targeted to treat more of the person than the diagnosis of IGD (Carlisle et al., 2019). Furthermore, there have been limitations found by Jeong et al. (2017) in the assessment of IGD being based on self-report measures which use 'yes' and 'no' questionnaires. These pose limitations for gathering more precise answers from clients to evaluate the symptoms of IGD properly.

Other limitations have been found in tools proven to be useful in identifying IGD. This includes the Structured Clinical Interview for Internet Gaming Disorder (SCI-IGD) which has proven ineffective in identifying the absence of 'withdrawal' and 'unsuccessful attempt to control' (Koo et al., 2017). Koo et al. (2017) identify that measuring these criteria in adolescents through self-reports may be problematic because adolescents may not recognize these states of withdrawal and loss of control in themselves. This is especially true if they have never attempted to stop gaming and have not experienced these symptoms prior or for those who may lack a more sophisticated degree of personal insight. For this reason, it is suggested that more in-depth

assessment tools that incorporate a probing process may be needed to help fill this gap and provide a more accurate measurement of IGD (Jeong et al., 2017).

It is important that assessing and diagnosing IGD reaches a point in research in which practical application can be considered consistent and reliable. Assessment tools should only be used when validity and reliability for those tools have been established for members of the population for which they have been tested. If not established, practitioners need to disclose the strengths and limitations of any results from these tests (American Psychological Association, 2017). The criteria currently proposed for IGD must undergo more research to refine specificity and applicability before accurately assessing and identifying IGD, especially in adolescents (Chen et al., 2018). The current and future research in this area will help identify and potentially address gaps in the criteria that need further inspection and adjustments.

Motivational factors to explain the pleasure of immersing oneself in online games may have to do with providing a means to an end, instant gratification, and mood regulation via online gaming (Hu et al., 2018). Moge and Romano's (2020) study revealed that coping and escape-based behaviours are an adaptive strategy for diverting the mind to serve the purpose of managing negative emotions felt in daily life. Therefore, online gaming is beginning to be seen as more of a coping strategy to replace needs with online gaming behaviours. Some have viewed this maladaptive coping as a failed solution instead of labelling it as an addiction (Essig, 2012). Essig (2012) also points out that treating the overuse of technology, in general, requires an understanding of the underlying problem that has led to the failed solution, such as anxiety, social skills, depression, self-esteem, social isolation, and family dysfunction. Many researchers have come to similar conclusions finding that individuals with IGD tend to have comorbid mental health problems such as dysfunctions in emotional regulation and self-evaluation (Kim et

al., 2018). Therefore, it is important to continue looking at IGD in terms of the purpose it serves while still considering the addictive components related to loss of control and withdrawals.

Interventions that educate gamers on the risk of IGD and focus on prevention may help minimize unhealthy behaviours before developing to the extent of IGD diagnosis. At this point, interventions should focus on the symptoms present and comorbidities (Ko et al., 2020).

Understanding IGD from a practitioner's perspective, eight psychiatrists participated in a study by Yesilyurt (2020), answering open-ended questions about their experiences with IGD. In this study, most participants agreed that focusing on comorbidities was a priority over diagnosing IGD. However, none of the participants agreed on the diagnosis of IGD or any standard duration of screen time suitable for the diagnosis of IGD. This speaks to the importance of prioritizing comorbidities to benefit the treatment of IGD as these underlying problems may take precedence over diagnosing IGD. Furthermore, these participants all stated that they have rarely experienced IGD in their clients. The very few they have had as clients present higher with comorbidities of anxiety, depression, and ADHD (Yesilyurt, 2020). Although limited to a few psychiatrists and not including counsellors, it is important to consider the prevalence of IGD and how the proposed diagnostic criteria track with the high presentation of comorbidities.

For practitioners, some challenges in diagnosing IGD and treating IGD involve the stigma of and connection to socially constructed ideals for men regarding mental health (Chen et al., 2018). Chen et al. (2018) add that there is a trend or expectation for men to uphold a certain amount of leisure time outside of internet and gaming use despite its growing availability, contributing to the rise of IGD. This primarily involves masculine expectancies to uphold a certain stature and internalize problems by adopting maladaptive coping strategies linked to social isolation and other mental health issues. Interacting online and having social involvement

through games and online resources can help lessen feelings of isolation and compensate for social interaction in other areas of daily living (Eichenberg et al., 2017). This can also indicate a potential for increased use of the internet and gaming and thus, IGD.

## **Treatment**

Treatment approaches such as CBT-based therapies (Curtis et al., 2017; González-Bueso et al., 2018; Sugaya et al., 2019; Young & Brand, 2017) and family-based therapy (Hwang et al., 2020; Sugaya et al., 2019; Uliaszek et al., 2019; Zajac et al., 2017) have been most prevalently discussed in the existing literature about IGD treatment for adolescents. Psychodynamic therapy, however, is another potential approach to treating IGD in adolescents. Essig (2012) describes pathological gaming as a failed solution rather than a gaming addiction. In this case study, Essig (2012) used psychodynamic therapy to uncover the underlying problems pertaining to the failed solution and address the use of online interaction as a simulation for all that is lacking in the user's real world. Benarous et al. (2019) describe two developmental pathways as internalized and externalized. The internalized pathway has to do with the development of social anxieties and emotional/behavioral avoidance tendencies. The externalized pathway involves emotional regulation strategies existing at a lower level, as well as the presence of impulsivity. Benarous et al. (2019) view gaming as a maladaptive coping strategy that adolescents employ to manage or avoid interpersonal relationships that cause fear and be an alternative to attachment aside from relationships. Of importance from a psychodynamic view is a mindful assessment of environmental backgrounds and development history to help the practitioner understand stressful factors in the adolescent's life that may be contributing to their maladaptive coping strategies and emotional regulation. To treat IGD from this perspective, Benarous et al. (2019) recommend

psychotherapies that are insight-oriented, attachment-based, and dialectical behavioral therapy to address trust in relationships and emotional awareness, regulation, and expression.

Martín-Fernandez et al. (2017) conducted a study in which participants received treatment based on the behavioral addiction model and compared adolescents with internalizing vs. externalizing mental comorbidities. They found that examining adolescents' motivations behind video game use was essential to determining appropriate treatment approaches. For adolescents with an externalizing profile, treatment was aimed at being outpatient, having fewer visits, changing patterns of maladaptive videogame playing, and showed changes after 3-months. Furthermore, treatment included the family setting limits for partial abstinence and providing support for re-learning videogame playing without using it as maladaptive coping. For adolescents with internalizing profiles, treatment required a more comprehensive, supportive, and slower approach to help focus on comorbidities and social relationships. This study by Martín-Fernandez et al. (2017) provides an example of why it is important to consider the differences in adolescents and their presentations of IGD to accurately define and identify an appropriate treatment plan that meets the adolescents' critical needs.

CBT has also been discussed at length in terms of its application to treating IGD. CBT often involves the use of modifying or reducing gaming behaviours (Young, 2011). The goal of many CBT-based therapies for IGD assumes that introducing a schedule, reinforcement, or modifying stimuli within gaming environments, will reduce pathological gaming behaviour and cause the adolescent to utilize their cognitive resources to reflect on the pros and cons of the activity of gaming (King et al., 2017). Under the umbrella of CBT, approaches such as cognitive restructuring, psychoeducation, and mindfulness have also been useful in providing acceptance for gaming addictions and strategies to reduce gaming behavior (Niedermoser, 2021). CBT can

also be delivered in a group therapy format that has shown to be beneficial in providing psychoeducation, behavior analysis and modification, emotion management, social skills enhancement, participation by parents, and a cohesive and supportive environment (Wendt et al., 2021). Wendt et al. (2021) addressed this by providing a group therapy format that included modules pertaining to motivation, disturbance development, the role of own feelings, individual goal setting, development of control behavior and compensation mechanisms, developing relationships, and relapse prevention and social pressure. These modules were intended to and succeeded in reducing problematic gaming, enhancing social skills, and supporting emotion regulation (Wendt et al., 2021), all of which are core factors in IGD (Estevez et al., 2019; Karaer & Akdemir, 2019; Wichstrøm et al., 2019). Thus, another beneficial treatment approach to IGD in adolescents is the use of CBT group therapy.

Many treatments aim to modify or reduce problematic gaming, while some aim to use abstinence to reduce problematic gaming long-term (King et al., 2017). King et al. (2017) conducted a study on adults aged 18-25 years to examine cognitive changes after abstaining from gaming for 84 hours. This treatment method proved successful in reducing withdrawal symptoms in the first 48 hours of abstinence, was brief and cost-effective, simple, and a high majority of the sample showed reliable and clinically significant change. Because the participants in this study were adults rather than adolescents, it would be worth future research examining the efficacy of this treatment approach for adolescents and what differences may exist based on developmental stages and age-related behaviours/concerns.

However, Kaptsis et al. (2016) found that withdrawal symptoms due to abstinence appeared to be inconsistent with IGD as presented in the DSM-5, which states withdrawal symptoms as presenting following complete abstinence from gaming. Therefore, it is suggested

by Kaptsis et al. (2016) that withdrawal symptoms experienced from internet gaming are not as likely to increase within 84 hours of abstaining. This supports the study by King et al. (2017) and the notion that the DSM-5 suggests dependence on gaming as opposed to what may be emotional reactivity (Kaptsis et al., 2016).

These treatment approaches provide implications for treatment options; however, the literature remains focused on CBT-based interventions as many other approaches have not been studied, tested, or verified as efficacious for the treatment of IGD yet. Since evidence-based practices are still severely lacking in adequacy, guiding treatment is still a dilemma faced by health practitioners (King et al., 2017). Defining adequate and effective treatment would notably benefit from continued research in treating IGD with different therapeutic approaches tailored to individuals and adolescents.

### **Fundamental Next Steps for Research**

Refining the definition and implications of IGD is a fundamental step for future research in determining the core differences between internet addiction, gaming addiction, and internet gaming disorders. As mentioned previously, these terms have significant differences that can impact how practitioners view internet use and gaming online/offline as potentially different problems and, thus, with different treatment approaches (Fam, 2018). Furthermore, there are many implications IGD has on adolescent's health, such as depression (Moge & Romano, 2020; Yen et al., 2019), anxiety (Hwang et al., 2020; Ju-Yu et al., 2019), isolation (Ballarotto et al., 2018), and disconnection (González-Bueso et al., 2018; Hwang et al., 2020). Because adolescents are at a point in their lives where their development is sensitive and malleable, future research needs to examine the impact of these concerns and the increased comorbidity being seen

with IGD (Liu et al., 2018). Further research in this area can help practitioners better understand their clients and the role of IGD in either the development or addition of these comorbidities.

### **Assessment and Diagnosis**

The diagnostic criteria proposed for IGD in the DSM-5 and ICD-11 require further research to determine the adequacy of each criterion. There have been very few studies that examine the validity and reliability of the currently proposed criteria (Koo et al., 2017). Koo et al. (2017) conducted a study investigating these criteria in adolescents and found that 'deceit' and 'escapism' showed low diagnostic accuracy. This points to the importance of testing and re-testing each criterion to determine if these are suitable for evaluating IGD in adolescents and informing problematic areas that need attention and intervention. As this research has begun to emerge, it is important to continue seeking consistency and understanding in diagnostic criteria and considering differences of IGD presentation and identification at different stages (Koo et al., 2017). While considering all nine diagnostic criteria, weight should be allocated appropriately to each criterion as weighing them equally has shown discrepancies in how they each contribute to IGD (Schivinski et al., 2018).

Future research should also consider how gamers are classified as a uniform group without careful consideration of differences in characteristics, personality, demographics, and culture that may be useful in assessing reasons that motivate gamers to play excessively (Carlisle et al., 2019). Carlisle et al. (2019) also found that by understanding motivations to play, commonalities among personality traits can help develop common risk factors to consider in prevention and treatment planning. More research in this area can further identify factors leading up to IGD before it reaches a point of becoming problematic gaming and, thus, IGD. Furthermore, research that explores these groups of gamers and the types of games they play can

help build further understanding into how different games may impact people in different ways and how this can lead to problematic use (Carlisle et al., 2019).

### **Longitudinal Studies**

Future research would benefit from the addition of long-term effects of treatment outcomes for IGD. Many so far have not evaluated treatment outcomes further than immediately after treatment or at 3-month follow-ups (Zajac et al., 2017). Research investigating long-term effects of different kinds of IGD treatment can be beneficial in providing evidence beyond 3-months. In line with this, it may also benefit conducting long-term studies of the effects of gaming outside of self-reports. González-Bueso et al. (2018) found that adolescents who continued down a path of problematic gaming for two years showed increased depression, anxiety, and social challenges. This shows what can become long-term effects of IGD, outside of merely a correlation with IGD. Longitudinal research investigating the effects of IGD after prolonged periods of gaming behaviour and treatment outcomes over time can help understand how IGD shapes other mental health concerns and comorbidities and the efficacy of treatment for IGD and its comorbidities (Chen et al., 2018).

### **Interventions and Treatment**

Long-term outcomes, however, have been explicitly measured in treatment interventions using CBT which show that CBT is currently considered an effective treatment approach for IGD but has not proven to last long-term (Day, 2017). Further research is required to examine other intervention approaches to this extent to determine if efficacy can be correlated to long-term outcomes. It will also be necessary for research to continue exploring IGD and different avenues of diagnosing and treatment because as technology continues to advance, counselors will have to stay up to date with current research (Yesilyurt, 2020). In terms of outdated

research, psychologists do not base interventions or diagnoses on any outdated form of data or results as these are not useful for the current purpose (American Psychological Association, 2017). Furthermore, because there is more research in adolescents with substance abuse problems, which has been closely compared to IGD, research in this area should investigate the evidence-based treatments for adolescents with substance abuse and test these interventions on adolescents with IGD (Zajac et al., 2017). This research approach could help shape the direction for IGD treatments and interventions that are already proven effective in addiction within the adolescent population.

Without continued research in defining and clarifying IGD along with its diagnostic criteria and assessment tools, it will be difficult to implement appropriate treatment plans for adolescents with IGD. Furthermore, research should continue to seek understanding about the efficacy of current IGD treatments and the long-term outcomes of these treatments to determine the suitability of specific treatments for adolescents with IGD. Przybylski et al. (2016) suggest continued research in these areas so that counsellors are not left with limited resources in terms of treatment options. Weinstein et al. (2017) also suggest that further research establishes evidence-based treatments before adopting IGD in future diagnostic manuals.

### **Recommendations for Practice**

A strong recommendation for practice and counselors is to consider how we view adolescents with IGD if this view is from a lens of addiction, problematic users, or individuals who have developed maladaptive coping strategies. The lens chosen will determine how counsellors interact with these clients individually and systematically (Kardefelt-Winther, 2017). These interactions will also shape the course of intervention and consideration of treatment approaches that will be most appropriate for each client.

Another lens that has been discussed throughout this research is the involvement of family and attachment in IGD development and perpetuation. In treatment recommendations, it would be beneficial to recommend the inclusion of families. It has been found that involving the family in IGD treatment; parents are given the opportunity to play an active role in the intervention process. This can help parents participate in learning about alternative coping strategies for themselves and support their adolescents (Lo et al., 2021). Family therapy has also been found to be an effective intervention approach to treating IGD symptoms by providing family cohesion that may be lacking and thus, contributing to problematic gaming behaviors in adolescents (Sugaya et al., 2019). By bringing family, especially parents, into treatment with adolescents, there is an added support component and an added educational component for the family in understanding IGD and the adolescent experiencing it. Counsellors may also benefit from considering the parents' mental health, whereas family counselling can also be beneficial in treating the whole family as IGD affects others beyond the individual (Sugaya et al., 2019).

It is recommended that examining stressful events that play a significant role in the lives of adolescents is essential in understanding how they adjust during this period (Maya et al., 2018). It is important to note that stressors occurring in the family have also been more significant than individual life stressors when it comes to the presence of IGD in adolescents (Maya et al., 2018). This alludes to the importance of considering family, or at least the family's implications on adolescents with IGD, to inform treatment. In deciding whether family-based treatments are an appropriate and suitable option for treating IGD in adolescents, counsellors should use their best judgement and consider an analysis of family functioning and communication to inform treatment (Lo et al., 2021).

From an individual perspective, resilience has been found to play a significant role in risk factors for IGD and a factor that may be promoted to prevent the exacerbation of depression and perceived stress (Yen et al., 2019). Yen et al. (2019) suggest that gaming can be used as a form of escapism from depression and perceived stress because, without resilience, there is no buffer in place. Therefore, depression is a significant factor for counsellors to consider in ensuring treatment before IGD itself. By reducing gaming as an intervention rather than immediately treating depression, the depression aspect may be missed, and the coping tool has been taken away, which could worsen the depression (Yen et al., 2019). Therefore, it is increasingly important to consider underlying and contributing factors before treating IGD simply by reducing gaming. It is also recommended that interventions encouraging and teaching coping strategies to manage depression and stress be strongly considered for adolescents experiencing IGD (Ju-Yu et al., 2019). Thus, when working with client's counsellors should first consider the underlying concerns such as depression, anxiety, and maladaptive coping that may need to be dealt with more than gaming behaviour itself. This way, practitioners can guide treatment to help the client better address issues causing the overuse of gaming.

Some important considerations for the practice of counselling adolescents with IGD include careful consideration of bias and stigma towards gaming as problematic. It has been found that there are some benefits to gaming as a healthy coping strategy as an opportunity for social connection. Weinstein et al. (2017) found that many adolescents feel more connected to their friends via online social environments and gaming. They may lack social support in other areas of their lives offline. Carlisle et al. (2019) also point out an important consideration for counsellors in recognizing that there is a difference between introverted and extroverted gamers and what they get out of gaming behavior. While introverted individuals might prefer online

social interaction, extraverted gamers see an opportunity for social interaction on top of their already existing social connections offline. The notion that motivation for social interaction through gaming is different for gamers is important to consider these differences in developing individual treatment plans. Developing interventions will depend on the individuals' needs and preferences and accommodating these needs and preferences will help counsellors conceptualize the role that excessive gaming plays in a particular adolescent's life (Curtis et al., 2017).

### **Reflexive Self-Statement**

Considering my previous biases discussed prior to this research, I believe I have adopted some new views considering IGD while others have been maintained throughout the research process. How I see the topic of IGD in adolescents differently and how it has changed my perceptions and biases on some matters is essential to how this research is interpreted. My previously identified bias had to do with concerns for pathologizing gaming behaviours that may not warrant being considered a diagnosis or disorder. Since IGD has not reached a level at which it can be adequately considered valid in its diagnostic criteria (González-Bueso et al., 2018). The academic process and research have changed how I approach this bias in providing an opportunity to see IGD through the lens of a diagnosis to understand the importance of its role in addressing potentially deeper issues the IGD itself. I feel that I have successfully mitigated this bias throughout the research process by including multiple perspectives of IGD outside of the view that pathologizing is dangerous. It can be helpful to have a diagnosis for something as specific as IGD that, if treated through the lens of gambling disorder or substance abuse disorder, may not be appropriately assessed, or treated (King et al., 2018).

Another bias was the view of IGD through the lens of the psychodynamic model of addiction, which sees the problem as a failed solution for problems that exist in other areas of the

individual's life (Essig, 2012). The goal to mitigate this bias was to see IGD through the lens of a biopsychosocial approach to addiction. A broader understanding of the influences and characteristics of IGD could be adopted. I feel the research process has changed this view of IGD from a psychodynamic lens to the extent that I now believe that future research would also benefit from taking a biopsychosocial lens. In taking a biopsychosocial lens to IGD, future research is not limited to one point of view. Instead, it benefits from exploring IGD with a more expansive understanding of the connection between predisposing and contributing factors being a possible array of neurobiological, psychological, and cognitive factors (Kim & Hodgins, 2018).

This research has also provided the insight that gender differences appear in many facets of IGD instead of merely the extent to which males and females partake in excessive gaming behaviors. Some examples include differences in gaming preferences (Cole & Griffiths, 2007), motivations (Hu et al., 2018), and psychological outcomes (Ballarto et al., 2018). Further research may also benefit from exploring gender differences in treatment outcomes for IGD and expanding further to the inclusion of genders outside of merely male and female, as the populations may be falling through the cracks of IGD research.

My final bias involved the understanding of IGD through a family-based lens. This included the view that attachment and family bonds play a significant role in developing and treating IGD. Furthermore, CBT is the most prominent and appropriate treatment option for IGD (González-Bueso et al., 2018; Sugaya et al., 2019; Young & Brand, 2017). However, the research has changed this bias in identifying that CBT may be effective as a treatment but has yet to show efficacy in long-term studies addressing treatment outcomes (Day, 2017). In terms of family-based interventions and treatment, I feel that CBT-based family interventions may be

effective. However, other variants of family-based treatment, such as psychoeducational approaches, which involve parents and families support and active role (Lo et al., 2021), require further investigation as these appear to be significant components in contributing to IGD in adolescents.

### **Conclusion**

The purpose of this comprehensive literature review was to synthesize the literature about internet gaming as a behavioral addiction in adolescents that can be diagnosable as IGD. By understanding it through a biopsychosocial lens of disconnection, attachment, and pre-existing conditions, proper assessment can lead to treatment options being better understood and provided by practitioners.

Implications for the field of counselling psychology include an understanding of the evolution of IGD over the last three decades. IGD has progressed from McClure & Mears' (1984) study examining the motivation behind video game playing to identifying not only motivations (Hu et al., 2018) but as far as gender differences (Cole & Griffiths, 2007) and underlying factors. These contribute to psychological concerns such as depression, anxiety, self-esteem, and social isolation (Essig, 2012). In attempts to imitate other disorders beginning with gambling disorder, IGD criteria have been viewed as addiction from the start, leading into its comparison to substance use disorders (King et al., 2018).

Other implications for the field include the notion that comorbidities attached to IGD present practitioners with the conflict of treating IGD for its excessive gaming or treating the underlying conditions that may contribute to the development of IGD. Some practitioners have expressed that treating comorbidities should precede that of diagnosing IGD (Yesilyurt, 2020). These comorbidities have been shown to play a significant role in IGD, with depression (Yen et

al., 2019), stress and anxiety (Hwang et al., 2020), and low self-concept (Kim et al., 2018) being the most proximal factors for adolescents presenting with IGD. In line with these concerns is the impact of disconnection that is felt among adolescents and their families. With lower offline support, adolescents may experience increased psychological impacts that can encourage introversion (González-Bueso et al., 2018) and increased online involvement to compensate for that support (Karaer & Akdemir, 2019). IGD has significant psychological effects on adolescents and their families who bear significant stress of their own in managing their child's IGD (Markoulakis et al., 2020). This can have implications for the benefit of family-based interventions that can address parental involvement and support and concerns for the adolescents' gaming behaviour (Markoulakis et al., 2020).

The proposal to include IGD in future revisions of the diagnostic manual has significant implications for diagnosing and the accuracy of IGD criteria. It can be challenging to differentiate between symptoms of IGD and other mental health symptoms, which concerns the practice of practitioners in taking diligent care to consider the role of IGD and underlying symptoms (Chen et al., 2018). Accurately identifying healthy from unhealthy coping and gaming behaviours will also affect how IGD is assessed and how interventions are appropriately based on these assessments (Moge & Romano, 2020). Furthermore, IGD assessment tools must converge in terms of efficacy and applicability for each proposed criterion (Jeong et al., 2017; Koo et al., 2017). This will affect how soon IGD as an official diagnosis can be included in the DSM until continued research can determine consistency across assessment tools.

Adopting multiple perspectives in the development and treatment of IGD will benefit future research into IGD before including it as a diagnosis in future revisions of the diagnostic manual. A proposed diagnosis such as IGD, which is not well understood, should not be limited

to one point of view or understanding until further research can evaluate consistencies and inconsistencies in IGD. A diagnosis can often help clients understand their problems. However, a diagnosis can also provide a negative label, and if not well understood, this label can be damaging and impact how the treatment is appropriately provided (Carras et al., 2018). Ethically, it is vital that, as practitioners, we are careful with how we treat adolescent clients for something that is not yet fully understood.

As IGD is still not fully understood as a mental disorder, there are some significant next steps that research must take before the inclusion of IGD can be entirely accepted. Refining the definitions of IGD and its comorbidities should be of utmost importance (Liu et al., 2018) so there is no lack of understanding of the total capacity and capabilities that IGD can have on adolescents' mental health. Diagnostic criteria and assessment tools are another essential factor that requires further research to determine the eligibility and applicability of each criterion as adequate to properly assess IGD (Koo et al., 2017; Schivinski et al., 2018). Underlying and motivational factors will also be necessary for future research to help divide different kinds of gamers into groups to identify commonalities among potential risk factors (Carlisle et al., 2019). Aside from predisposing factors, longitudinal research can help identify treatment outcomes after prolonged periods (Zajac et al., 2017) and the impact of IGD on adolescents over time to understand the impact of mental health throughout IGD (González-Bueso et al., 2018). Further research in the realm of treatment for IGD outside of CBT and family-based interventions can also benefit the understanding of IGD treatment as research continues to advance alongside technology and its impacts (Yesilyurt, 2020).

Practice recommendations must consider that as IGD continues to be understood, practitioners should be cautious in identifying problematic gamers as addicted or coping with

underlying problems. This is important to consider because it can have substantial implications for how assessment and treatment of IGD are approached appropriately and adequately (Kardefelt-Winther, 2017). It is also recommended that practitioners, whether family-based or not, consider the implications and the potential role of the family in both the development and treatment of IGD, as it is a significant factor in IGD (Lo et al., 2021; Maya et al., 2018; Sugaya et al., 2019). It is also important that in terms of treatment, practitioners should use their professional judgement to carefully consider the impact of diagnosing and treating IGD or considering underlying conditions and comorbidities that may require immediate attention. This is important so that these conditions are not exacerbated by treating and minimizing gaming behaviours (Yen et al., 2019).

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct* (2002, amended effective June 1, 2010, and January 1, 2017). <https://www.apa.org/ethics/code/index.aspx>
- Ballarotto, G., Volpi, B., Marzilli, E., & Tambelli, R. (2018). Adolescent internet abuse: A study on the role of attachment to parents and peers in a large community sample. *BioMed Research International*. <https://doi.org/10.1155/2018/5769250>
- Beck, A. T. (1993). Cognitive therapy: Past, present, and future. *Journal of Consulting and Clinical Psychology*, 61(2), 194–198. <https://doi.org/10.1037/0022-006X.61.2.194>
- Benarous, X., Morales, P., Mayer, H., Iancu, C., Edel, Y., & Cohen, D. (2019). Internet gaming disorder in adolescents with psychiatric disorder: Two case reports using a developmental framework. *Frontiers in Psychiatry*, 10, 336. <https://doi.org/10.3389/fpsyt.2019.00336>
- Carlisle, K. L., Neukrug, E., Pribesh, S., & Krahwinkel, J. (2019). Personality, motivation, and internet gaming disorder: Conceptualizing the gamer. *Journal of Addictions & Offender Counseling*, 40(2), 107–122. <https://doi.org/10.1002/jaoc.12069>
- Carras, M. C., & Kardefelt-Winther, D. (2018). When addiction symptoms and life problems diverge: A latent class analysis of problematic gaming in a representative multinational sample of European adolescents. *European Child & Adolescent Psychiatry*, 27(4), 513–525. <http://doi.org/10.1007/s00787-018-1108-1>
- Chen, I., Lee, Z., Dong, X., Gamble, J. H., & Feng, H. (2020). The influence of parenting style and time management tendency on internet gaming disorder among adolescents.

- International Journal of Environmental Research and Public Health*, 17(23), 9120.  
<https://doi.org/10.3390/ijerph17239120>
- Chen, K. H., Oliffe, J. L., & Kelly, M. T. (2018). Internet gaming disorder: An emergent health issue for men. *American Journal of Men's Health*, 12(4), 1151–1159.  
<https://doi.org/10.1177/1557988318766950>
- Curtis, M., Phenix, M., Munoz, M., & Hertlein, K. (2017). Video game therapy: Application of the couple and family technology framework. *Contemporary Family Therapy: An International Journal*, 39(2), 112–120. <https://doi.org/10.1007/s10591-017-9409-y>
- Dang, D. L., Zhang, M. X., Leong, K. K., Wu, A. M. S. (2019). The predictive value of emotional intelligence for Internet Gaming Disorder: A 1-Year longitudinal study. *International Journal of Environmental Research and Public Health*, 16(15), 2762.  
<http://doi.org/10.3390/ijerph16152762>
- Day, I. (2017). A family systems approach to the understanding and treatment of internet gaming disorder. *The Family Journal*, 25(3), 264–270.  
<https://doi.org/10.1177/1066480717711108>
- Eichenberg, C., Schott, M., Decker, O., & Sindelar, B. (2017). Attachment style and internet addiction: An online survey. *Journal of Medical Internet Research*, 19(5).  
<https://doi.org/10.2196/jmir.6694>
- Entertainment Software Association of Canada. (2020). *Real Canadian gamers essential facts*.  
[https://doi.org/essentialfacts2020.ca/wp-content/uploads/2020/11/RCGEF\\_en.pdf](https://doi.org/essentialfacts2020.ca/wp-content/uploads/2020/11/RCGEF_en.pdf)
- Essig, T. (2012). The addiction concept and technology: Diagnosis, metaphor, or something else? A psychodynamic point of view. *Journal of Clinical Psychology*, 68(11), 1175–1184. <https://doi.org/10.1002/jclp.21917>

- Estevez, A., Jauregui, P., & Lopez-Gonzalez, H. (2019). Attachment and behavioral addictions in adolescents: The mediating and moderating role of coping strategies. *Scandinavian Journal of Psychology*, *60*(4), 348-360. <https://doi.org/10.1111/sjop.12547>
- Fam, J. Y. (2018). Prevalence of internet gaming disorder in adolescents: A meta-analysis across three decades. *Scandinavian Journal of Psychology*, *59*(5), 524–531. <https://doi.org/10.1111/sjop.12459>
- González-Bueso, V., Santamaría, J. J., Fernández, D., Merino, L., Montero, E., Jiménez-Murcia, S., & Ribas, J. (2018). Internet gaming disorder in adolescents: Personality, psychopathology and evaluation of a psychological intervention combined with parent psychoeducation. *Frontiers in Psychology*, *9*, 787-787. <https://doi.org/10.3389/fpsyg.2018.00787>
- Han, J., Seo, Y., Hwang, H., Kim, S. M., & Han, D. H. (2020). Efficacy of cognitive behavioural therapy for internet gaming disorder. *Clinical Psychology & Psychotherapy*, *27*(2), 203–213. <https://doi.org/10.1002/cpp.2419>
- Hu, E., Stavropoulos, V., Anderson, A., Scerri, M., & Collard, J. (2018). Internet gaming disorder: Feeling the flow of social games. *Addictive Behaviors Reports*, *9*. <https://doi.org/10.1016/j.abrep.2018.10.004>
- Hwang, H., Hong, J., Kim, S. M., & Han, D. H. (2020). The correlation between family relationships and brain activity within the reward circuit in adolescents with internet gaming disorder. *Scientific Reports*, *10*(1), 9951-9951. <https://doi.org/10.1038/s41598-020-66535-3>
- Hyunchan, H., Jisun, H., Sun, K., & Han, D. H. (2020). The correlation between family relationships and brain activity within the reward circuit in adolescents with internet

gaming disorder. *Scientific Reports (Nature Publisher Group)*, 10(1).

<http://doi.org/10.1038/s41598-020-66535-3>

Jeong, H., Yim, H. W., Sun-Jin, J., Lee, S.-Y., Kim, E., Son, H. J., Hyun-ho, H., Lee, H. K., Kweon, Y.-S., Bhang, S., Jung-Seok, C., Kim, B.-N., Gentile, D. A., & Potenza, M. N. (2017). Study protocol of the internet user cohort for unbiased recognition of gaming disorder in early adolescence. *BMJ Open*, 7(10).

<http://dx.doi.org.proxy.cityu.edu/10.1136/bmjopen-2017-018350>

Ju-Yu, Y., Huang-Chi, L., Chou, W.-P., Tai-Ling, L., & Ko, C.-H. (2019). Associations among resilience, stress, depression, and internet gaming disorder in young adults. *International Journal of Environmental Research and Public Health*, 16(17).

<http://doi.org/10.3390/ijerph16173181>

Ju-Yu, Y., Yeh, Y.-C., Peng-Wei, W., Tai-Ling, L., Yun-Yu, C., & Ko, C.-H. (2018). Emotional regulation in young adults with internet gaming disorder. *International Journal of Environmental Research and Public Health*, 15(1), 30.

<http://doi.org/10.3390/ijerph15010030>

Kaliszewska-Czeremska, K. (2011). Modelling excessive internet use: Revision of R. Davis's cognitive-behavioural model of pathological internet use. *Polish Psychological Bulletin*, 42(3), 129. <http://doi.org/10.2478/v10059-011-0018-6>

Kaptsis, D., King, D. L., Delfabbro, P. H., & Gradisar, M. (2016). Trajectories of abstinence-induced internet gaming withdrawal symptoms: A prospective pilot study. *Addictive Behaviors Reports*, 4, 24–30. <https://doi.org/10.1016/j.abrep.2016.06.002>

- Karaer, Y., & Akdemir, D. (2019). Parenting styles, perceived social support and emotion regulation in adolescents with internet addiction. *Comprehensive Psychiatry*, 92, 22-27. <https://doi.org/10.1016/j.comppsy.2019.03.003>
- Kardefelt-Winther, D. (2017). Conceptualizing internet use disorders: Addiction or coping process? *Psychiatry and Clinical Neurosciences*, 71(7), 459-466. <https://doi.org/10.1111/pcn.12413>
- Kim, H. S., & Hodgins, D. C. (2018). Component model of addiction treatment: A pragmatic transdiagnostic treatment model of behavioral and substance addictions. *Frontiers in Psychiatry*, 9, 406-406. <https://doi.org/10.3389/fpsy.2018.00406>
- Kim, M.-K., Jung, Y. H., Kyeong, S., Shin, Y.-B., Kim, E., & Kim, J.-J. (2018). Neural correlates of distorted self-concept in individuals with internet gaming disorder: A functional MRI study. *Frontiers in Psychiatry*, 9. <https://doi.org/10.3389/fpsy.2018.00330>
- King, D. L., Kaptsis, D., Delfabbro, P. H., & Gradisar, M. (2017). Effectiveness of brief abstinence for modifying problematic internet gaming cognitions and behaviors. *Journal of Clinical Psychology*, 73(12), 1573–1585. <https://doi.org/10.1002/jclp.22460>
- King, D., Delfabbro, P., Liem, T., & Dobler, T. K. (2018). *Internet gaming disorder: Theory, assessment, treatment, and prevention*. Elsevier Science & Technology. <http://ebookcentral.proquest.com/lib/cityuseattle/detail.action?docID=5455687>
- Király, O., Bőthe, B., Ramos-Diaz, J., Rahimi-Movaghar, A., Lukavska, K., Hrabec, O., Miovsy, M., Billieux, J., Deleuze, J., Nuyens, F., Karila, L., Griffiths, M. D., Nagygyörgy, K., & Urbán, R. (2019). Ten-item internet gaming disorder test (IGDT-10): Measurement invariance and cross-cultural validation across seven language-based

samples. *Psychology of Addictive Behaviors*, 33(1), 91–103.

<http://doi.org/10.1037/adb0000433>

Kircaburun, K., Griffiths, M. D., Billieux, J. (2019). Psychosocial factors mediating the relationship between childhood emotional trauma and internet gaming disorder: A pilot study. *European Journal of Psychotraumatology*, 10(1).

<http://doi.org/10.1080/20008198.2018.1565031>

Ko, C., Lin, H., Lin, P., & Yen, J. (2020). Validity, functional impairment and complications related to internet gaming disorder in the DSM-5 and gaming disorder in the ICD-11. *Australian and New Zealand Journal of Psychiatry*, 54(7), 707-718.

<https://doi.org/10.1177/0004867419881499>

Koo, H. J., Han, D. H., Park, S.-Y., & Kwon, J.-H. (2017). The structured clinical interview for DSM-5 internet gaming disorder: Development and validation for diagnosing IGD in adolescents. *Psychiatry Investigation*, 14(1), 21–29.

<https://doi.org/10.4306/pi.2017.14.1.21>

Li, A. Y., Chau, C., & Cheng, C. (2019). Development and validation of a parent-based program for preventing gaming disorder: The game over intervention. *International Journal of Environmental Research and Public Health*, 16(11), 1984.

<https://doi.org/10.3390/ijerph16111984>

Li, W., Garland, E. L., McGovern, P., O'Brien, J. E., Tronnier, C., & Howard, M. O. (2017). Mindfulness-oriented recovery enhancement for internet gaming disorder in U.S. adults: A stage I randomized controlled trial. *Psychology of Addictive Behaviors*, 31(4), 393–

402. <http://doi.org/10.1037/adb0000269>

- Liu, L., Yao, Y.-W., Li, C. R., Zhang, J.-T., Xia, C.-C., Lan, J., Ma, S.-S., Zhou, N., & Fang, X.-Y. (2018). The comorbidity between internet gaming disorder and depression: Interrelationship and neural mechanisms. *Frontiers in Psychiatry, 9*.  
<https://doi.org/10.3389/fpsy.2018.00154>
- Lo, C. K. M., Yu, L., Cho, Y. W., & Chan, K. L. (2020;2021;). A qualitative study of practitioners' views on family involvement in treatment process of adolescent internet addiction. *International Journal of Environmental Research and Public Health, 18*(1), 86. <https://doi.org/10.3390/ijerph18010086>
- Markoulakis, R., Chan, S., & Levitt, A. (2020). The needs and service preferences of caregivers of youth with mental health and/or addictions concerns. *BMC Psychiatry, 20*(1), 409-409.  
<https://doi.org/10.1186/s12888-020-02801-y>
- Martín-Fernandez, M., Matalí, J. L., García-Sánchez, S., Pardo, M., Lleras, M., & Castellano-Tejedor, C. (2017). Adolescents with internet gaming disorder (IGD): Profiles and treatment response. *Adicciones, 29*(2), 125–133.  
<http://dx.doi.org/10.20882/adicciones.890>
- Maya, J., Lorence, B., Hidalgo, V., & Jiménez, L. (2018). The role of psychosocial stress on a family-based treatment for adolescents with problematic behaviors. *International Journal of Environmental Research and Public Health, 15*(9).  
<http://doi.org/10.3390/ijerph15091867>
- McClure, R. F., & Mears, F. G. (1984). Video game players: Personality characteristics and demographic variables. *Psychological Reports, 55*(1), 271–276.  
<https://doi.org/10.2466/pr0.1984.55.1.271>

- Moge, C. E., & Romano, D. M. (2020). Contextualising video game engagement and addiction in mental health: The mediating roles of coping and social support. *Heliyon*, 6(11), e05340-e05340. <https://doi.org/10.1016/j.heliyon.2020.e05340>
- Niedermoser (2021). A typical case report: Internet gaming disorder psychotherapy treatment in private practice. (2021). *International Journal of Environmental Research and Public Health*, 18(4), 2083. <http://dx.doi.org.proxy.cityu.edu/10.3390/ijerph18042083>
- Przybylski, A. K., Weinstein, N., & Murayama, K. (2016). Internet gaming disorder: Investigating the clinical relevance of a new phenomenon. *American Journal of Psychiatry*, 174(3), 230–236. <https://doi.org/10.1176/appi.ajp.2016.16020224>
- Schivinski, B., Brzozowska-Woś, M., Buchanan, E. M., Griffiths, M. D., & Pontes, H. M. (2018). Psychometric assessment of the internet gaming disorder diagnostic criteria: An item response theory study. *Addictive Behaviors Reports*, 8, 176–184. <https://doi.org/10.1016/j.abrep.2018.06.004>
- Sugaya, N., Shirasaka, T., Takahashi, K., & Kanda, H. (2019). Bio-psychosocial factors of children and adolescents with internet gaming disorder: A systematic review. *BioPsychoSocial Medicine*, 13(1), 3-3. <https://doi.org/10.1186/s13030-019-0144-5>
- Tereshchenko, S., & Kasparov, E. (2019). Neurobiological risk factors for the development of internet addiction in adolescents. *Behavioral Sciences*, 9(6). <http://doi.org/10.3390/bs9060062>
- Throuvala, M. A., Janikian, M., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2019). The role of family and personality traits in Internet gaming disorder: A mediation model combining cognitive and attachment perspectives. *Journal of Behavioral Addictions*, 8(1), 48–62. <https://doi.org/10.1556/2006.8.2019.05>

- Uliaszek, A. A., Al-Dajani, N., & Mills, L. (2019). Predictors of attrition from residential treatment for youths with addictive behaviors. *Journal of Child & Adolescent Substance Abuse*, 28(1), 1-7. <https://doi.org/10.1080/1067828X.2018.1561574>
- Wei, L., Zhang, S., Turel, O., Bechara, A., & He, Q. (2017). A tripartite neurocognitive model of internet gaming disorder. *Frontiers in Psychiatry*, 8. <https://doi.org/10.3389/fpsy.2017.00285>
- Wei, C., Chen, P., Xin, M., Liu, H., Yu, C., & Zou, Q. (2020). Interparental conflict, parent–adolescent attachment, and adolescent internet addiction: The moderating role of adolescent self-control. *Social Behavior and Personality*, 48(9), 1-13. <https://doi.org/10.2224/sbp.9150>
- Weinstein, N., Przybylski, A. K., & Murayama, K. (2017). A prospective study of the motivational and health dynamics of internet gaming disorder. *PeerJ*, 5, e3838-e3838. <https://doi.org/10.7717/peerj.3838>
- Wendt, L. M., Austermann, M. I., Rumpf, H.-J., Thomasius, R., & Paschke, K. (2021). Requirements of a group intervention for adolescents with internet gaming disorder in a clinical setting: A qualitative interview study. *International Journal of Environmental Research and Public Health*, 18(15), 7813. <http://dx.doi.org.proxy.cityu.edu/10.3390/ijerph18157813>
- Wichstrøm, L., Stenseng, F., Belsky, J., Soest, T. von, & Hygen, B. W. (2019). Symptoms of internet gaming disorder in youth: Predictors and comorbidity. *Journal of Abnormal Child Psychology*, 47(1), 71–83. <http://doi.org/10.1007/s10802-018-0422-x>
- World Health Organization (2020). *International statistical classification of diseases and related health problems* (11th ed.). <https://icd.who.int/>

- Yen, J., Lin, H., Chou, W., Liu, T., & Ko, C. (2019). Associations among resilience, stress, depression, and internet gaming disorder in young adults. *International Journal of Environmental Research and Public Health*, 16(17), 3181. <https://doi.org/10.3390/ijerph16173181>
- Yen, J., Yeh, Y., Wang, P., Liu, T., Chen, Y., & Ko, C. (2017;2018;). Emotional regulation in young adults with internet gaming disorder. *International Journal of Environmental Research and Public Health*, 15(1), 30. <https://doi.org/10.3390/ijerph15010030>
- Yesilyurt, F. (2020). Internet gaming disorder: Remarks of psychiatrists. *World Journal on Educational Technology: Current Issues*, 12(2), 98–106.
- Young, K. S. (2011). CBT-IA: The first treatment model for internet addiction. *Journal of Cognitive Psychotherapy*, 25(4), 304–312.
- Young, K. S., & Brand, M. (2017). Merging theoretical models and therapy approaches in the context of internet gaming disorder: A personal perspective. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.01853>
- Zajac, K., Ginley, M. K., Chang, R., & Petry, N. M. (2017). Treatments for internet gaming disorder and internet addiction: A systematic review. *Psychology of Addictive Behaviors*, 31(8), 979–994. <http://doi.org/10.1037/adb0000315>