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Gaming Disorder – A research overview

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Introduction

In 2018, the diagnosis *gaming disorder* was introduced into the WHO's ICD-11 classification system. This means that what was previously recognised as problematic video gaming can be diagnosed if certain criteria are met. There is some uncertainty, however, as to what this looks like in reality. How common is it? Who is affected? What does care involve? Are the diagnosis and its criteria relevant from a scientific perspective? And what significance has this had for research, diagnostics and treatment in a Swedish context?

These are some of the questions addressed here. This paper aims to summarise and communicate the contents of the report *Gaming disorder – en kunskapsöversikt* [Gaming Disorder – A research overview] for a broader target audience. For references, please see the original report.

What is gaming disorder?

The majority of young people in Sweden engage in gaming on a daily basis. It is also a major interest among many adults. For most people, gaming is no more or less problematic than other leisure activities. Just as with other interests, it can serve a positive function and be relaxing and a source of joy. Playing with others is common and for some people, who identify as 'gamers', gaming has developed into something of a lifestyle.

While many people view gaming as a positive activity, there has been an increasing awareness in recent years of the potential risks that excessive gaming can pose. Research on problematic gaming, or *gaming disorder* (GD), as it is called in this paper, is characterised by different definitions and there are many different assessment scales for diagnosing the problem. These are usually based to varying degrees on the criteria for either *gaming disorder* in ICD-11[1] or *internet gaming disorder* in DSM-5[2]. A consequence of this is that what is classified as GD according to one study may not necessarily be classified in the same way according to another. This has led to a conceptual confusion that complicates both the research on GD and the interpretation of its findings.

There is thus no standard definition for gaming disorder, but it can be said to be characterised by a problematic and compulsive gaming behaviour that has persisted for a long period of time and may lead to negative consequences for the individual's mental and/or physical health, social relationships and daily functions.

Although there does seem to be widespread agreement that problematic gaming exists, there has also been criticism as to whether GD qualifies as a diagnosis. Among other things, the unclear boundary between problematic gaming and 'high engagement' has been highlighted, as well as the relatively low diagnostic threshold for Internet Gaming Disorder in DSM-5.

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[1] ICD (*International Classification of Diseases*) is a classification system developed by the World Health Organization (WHO). ICD is used worldwide to diagnose all types of diseases, including psychiatric conditions.
[2] DSM (*Diagnostic and Statistical Manual of Mental Disorders*) is published by the American Psychiatric Association (APA) and is used globally to diagnose psychiatric conditions.

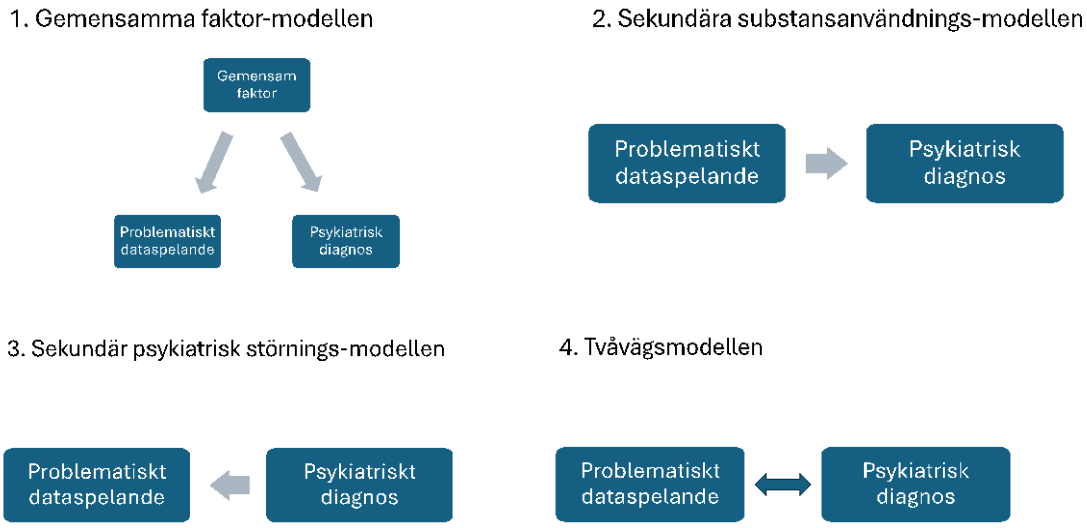
This, argue the critics, risks leading to over-diagnosis and the possible stigmatisation of normal gaming. The argument has also been made that GD should instead be seen as a symptom or a reaction to other difficulties, in which individuals use gaming as a sort of coping strategy to regulate emotions and deal with challenges in other areas of life.

How common is it?

The prevalence of gaming varies from country to country and the prevalence of GD thus also varies. Where gaming is common, the negative aspects of the behaviour are also more prevalent. Although it is likely that there are some differences between different countries, some of the variation is probably due to differences in study design, selection, and choice of measurement method. A stricter definition of GD yields a lower prevalence, where those who meet the criteria will show more severe symptoms with more extensive negative consequences. Considering the findings of the studies that have been conducted, the global prevalence of GD is estimated to be about 2%, and is likely higher in Asian countries. As for the prevalence of GD in the Swedish population, this cannot be commented on with any certainty due to a lack of broad population surveys that include this area.

Correlation with other psychiatric diagnoses

GD has been associated with different forms of both mental and physical illness, but the relationships are often complex and rarely entirely unidirectional. The figure below illustrates this. The models in the figure are often used to understand the relationship between addictive conditions and mental disorders, and are the most common in studies investigating the links between GD and other problems. In the common factor model, both conditions share risk factors, which leads to high comorbidity. In the second model, the addictive condition contributes to the development of other psychiatric conditions. The third model instead describes how an existing psychiatric condition contributes to the addictive condition. Finally, the bidirectional model suggests reciprocity, where one condition can increase vulnerability for the other, and vice versa.



The neurodevelopmental diagnoses autism and particularly ADHD (*Attention Deficit Hyperactivity Disorder)* have been shown in research to have strong correlations with gaming disorder. One reason for this may be that the difficulties associated with these neurodevelopmental conditions may likely lead to the challenges in video games being perceived as more worthwhile, manageable or stimulating than other tasks, and may also lead to them being experienced as more rewarding than they are for individuals without such diagnoses.

Anxiety and depression also have a strong and established link to GD, but the relationship between both of these conditions and GD is complex and the correlation seems to be bidirectional. On the one hand, GD can arise as a consequence of, or as a way to cope with, negative feelings associated with depression and anxiety. Many people seek refuge in video games to avoid difficulties and emotional discomfort, which may provide temporary relief from negative emotions. On the other hand, GD can also be a contributing factor to increased anxiety and depression. Excessive gaming can also lead to social isolation, lack of sleep, neglect of duties, and feelings of guilt and anxiety, which can in turn lead to or exacerbate mental health issues.

To gain a greater understanding of the casual relationship between GD and other problems, more studies are needed in which the same subjects are studied for a long period of time. But regardless of whether, for example, a case of depression arose due to GD or if the depression resulted in an escape into problematic gaming, it is still important to understand that GD is associated with various forms of ill health. Those who meet and work with this group need to be aware of potential comorbidities not only to be able to adapt interventions as needed, but also to be able to detect and manage related conditions. Regardless of cause and effect, it is clear that individuals who meet the criteria for GD, to a greater extent than those who do not meet the criteria, also have problems with anxiety, depression, ADHD, autism, sleep disorders and difficulties in school.

Risk factors

A number of the studies that attempt to describe risk factors for GD in fact describe the coexistence between GD and a number of factors (including the psychiatric conditions and problems discussed under the previous heading) but cannot actually describe the causal relationship. Purely demographic factors such as young age and male gender, however, have been shown to be decisive risk factors for the development of GD, which is clearly overrepresented among young people and among men. The correlations may seem obvious considering that even non-problematic gaming is clearly most common among boys and young men, but they are still relevant. Children and young people are especially vulnerable, due in part to their undeveloped brains, and can therefore be considered a group particularly worthy of protection. As for male gender, existing research indicates that the games played by boys, as compared to those played by girls, may have greater addictive potential than other games, but it is also possible that boys are more vulnerable to the mechanisms exploited by the gaming industry to engage and bind players to continued gaming consumption.

Dysfunctional family relationships have been found to be associated with GD. This relationship may also be both reciprocal and interactive. Poorly functioning family relationships have an impact on both mental ill-health and problematic behaviour, where the former further increases the risk of the latter. Moreover, GD in a child is something that affects the entire family. The problematic behaviour often creates conflicts that have an adverse impact on relationships and social interaction within the family.

The individuals who engage in gaming do so for different reasons and some research suggests that the motives behind gaming have significance for the risk of developing problematic gaming behaviour. Motives of a more negative nature, such as escape from uncomfortable feelings, show a strong association with GD, while more pleasurable motives such as recreation or development demonstrate a weak or negative correlation. Yet it is not unreasonable to assume that a certain motive reflects something else in the individual's life, which could in that case be considered the actual risk factor. Someone who, for example, states escape as a motive has something to flee from, such as anxiety or a destructive family dynamic. On the other hand, someone who states a competitive spirit might have personality traits that make the person vulnerable to dependency or addiction in general, but they are also likely to be inclined to choose games with competitive elements, which possibly have greater addiction potential than other games.

Features in games that increase the risk of GD

Some gaming mechanisms seem to have a relationship to GD and the risk of developing dependency. The gaming industry is a multi-billion-dollar business and the increasing transition to 'free-to-play games' in recent years has not resulted in any decrease in revenue. Income is instead generated via different types of micro-transactions that take place in the game itself, which increases the player's engagement and sense of having invested in the game. Random reinforcement is a psychological mechanism that is central to behavioural addiction and the

prevalence of 'loot boxes'[3] is one example of the type of features that contribute to the increasing similarity of gaming to gambling.

There is some research on how certain genres may be associated with GD. Genre research can be said to consist of two different main areas of inquiry, with some studies describing what characterises the individuals who prefer the different genres. The hypothesis that is then pursued is that individuals who prefer a certain genre have certain characteristics – a common risk profile – that makes them more vulnerable to addictive behaviour. Other studies instead focus on the elements that characterise the genres and how they might be considered more or less addictive. Elements described as particularly addictive are: (1) a complex reward system with interconnected rewards that reinforce short- and long-term play, (2) unexpected rewards such as 'loot boxes', (3) a financial model that encourages repetitive impulsive 'in-game' purchases of items, assets, currency or loot boxes, and (4) rewards that can only be earned through interaction with other players and through the forming of social alliances.

Treatment for GD

A systematic overview of treatment studies worldwide shows positive effects of medication, psychotherapeutic, behavioural and preventative treatments. The quality of the studies has been criticised, however, and it is problematic that the definition of GD varies significantly between studies, which affects the interpretation of the results, in terms of both how effective the treatments actually are and how common GD is in the population. Notwithstanding, the intervention that has the strongest support in the research is CBT-based treatment methods. The few treatment studies published in Sweden to date look promising, but just as with research globally, it is difficult to compare the results due to different approaches.

Conclusions

Gaming is a central part of many people's lives and affects children, young people and adults in different ways. For the majority, gaming is a source of entertainment and social interaction, but for some it can develop into problematic behaviour with negative consequences for mental and physical health, social functioning and education.

There is support in the existing research for the treatment of GD. CBT-based treatment methods are the most well-studied and have been recommended as first-line treatment. At present, there are only a few places in Sweden that offer support and treatment specifically for GD. One reason for this is that the diagnosis does not have a Swedish translation. Many of the potential GD patients therefore receive no diagnosis at all, or the problems are registered as something else. Child and youth psychiatry, parent groups and school health services are calling for interventions, however, and with an official translation with a diagnosis code, a patient group will emerge, which may drive the development of formal guidelines and care programmes.

Finally, more research is needed in the area. More long-term studies, which follow the same individuals over several years, can increase understanding of causal relationships between GD

[3] A 'loot box' is a digital box in a game that can be purchased using in-game currency or real-world money, or can be acquired through gameplay. The contents of the box are random and may consist of rewards such as weapons, clothing, or other objects.

and other psychiatric conditions and risk factors. Studies are also needed to identify which types of games and gaming features pose the greatest risk for the development of problematic gaming behaviour. More research on treatment is also needed. Without a strong research base, we risk missing important aspects of prevention and treatment, which may lead to increasing costs for society and suffering for affected individuals and their families. Greater knowledge increases the chances of contributing to a balanced and healthy gaming culture.