Addictive Behaviors Reports 21 (2025) 100602

Contents lists available at ScienceDirect

Addictive Behaviors Reports

journal homepage: www.elsevier.com/locate/abrep

Review

Online harms: Problematic technology use is a public health concern and requires a multistakeholder approach☆

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ARTICLE INFO

Keywords:
Technological addiction
Gaming Disorder
Internet addiction
Problematic technology use
Online harms

ABSTRACT

Modern technologies are inherently ubiquitous and mobile, making internet use the status quo. As our daily lives become increasingly mediated, social media have become ways of being and relating and impact on what we do and who we are. Despite the numerous benefits technology use offers to users, there is accumulating empirical evidence suggesting that problematic technology use is associated with online harms, which can impact the users' mental health and wellbeing detrimentally. Online harms are a public health concern and must be addressed from a multistakeholder perspective, engaging governments, parents, schools, the industry, and healthcare services on an international scale. Governments are working on improving user safety, parents are calling for support by educational establishments to prevent online harms, whilst the technology industry is advised to increase their corporate social responsibility efforts. Meanwhile, healthcare services must be accessible to provide professional support for those affected.

1. Internet use has become the status quo

With the ubiquity and mobility of modern technologies, internet use has become the status quo, with many people connected to it most of the time (Kuss, 2017). We are living in a world of deep mediatisation, where digital media and its infrastructures have become deeply embedded within society and transform how we live (Hepp, 2019). As our lives become increasingly mediated, social media in the form of social networking have become ways of being and relating, and impact on what we do and who we are, which has been classed as the 'always on' lifestyle (Boyd, 2012; Kuss & Griffiths, 2017). Currently, there are 4.7 billion active social media users across the globe who spend a daily average of 147 min on social media (Dixon, 2022). Much of this use benefits users in terms of their mental health and wellbeing. Social media use can counteract loneliness by providing a portal for social interaction and support, information and entertainment (González-Nuevo et al., 2022; Khan et al., 2014) and can promote mental health (Naslund et al., 2020; O'Reilly et al., 2018).

It is not only social media that is redefining our lives, but video gaming has become an increasingly popular pastime activity with currently 3.2 billion gamers worldwide. The videogame industry is a blossoming market, with an estimated worth of $268 billion by 2025 (WePC, 2022). Gaming provides a variety of benefits for the gamer, including rehabilitation for patients with a variety of injuries and movement disorders, as well as mental health and wellbeing support across generations, and improving communication, team-building skills, self-esteem and social competence, and can protect against loneliness (Griffiths et al., 2017; Kaye et al., 2017). Moreover, gaming can improve cognitive skills, such as task witching, attentional control, and time perception (Nuyens et al., 2018).

Taken together, internet use has become the status quo. It is transforming how we live and work, and offers a variety of benefits to our lives. Accordingly, in this article, the argument will be put forward that problematic technology use is a public health concern and requires a multistakeholder approach.

2. Problematic technology use may lead to harms

For all the benefits using the internet including gaming and social media can bring, there is a growing body of evidence indicating that excessive use of these particular technologies may lead to harms (Kuss & Pontes, 2019). Concerns are being raised about online harms, defined in the UK Online Safety Act as "illegal or harmful content and activity that can cause significant physical or psychological harm to users, particularly children, and requires online platforms to take action against it" (UK Parliament, 2023). Among these harms, problematic technology use

☆ This article is part of a special issue entitled: 'Behavioral addictions' published in Addictive Behaviors Reports.

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https://doi.org/10.1016/j.abrep.2025.100602
Received 29 August 2024; Received in revised form 21 March 2025; Accepted 26 March 2025
Available online 29 March 2025

or disordered technology use (i.e., a pattern of technology use indicated by impaired control over use, prioritization of using technology over other activities, and continued technology use despite negative consequences – see the criteria for *Gaming Disorder* (World Health Organization, 2019)) has been associated with a number of psychosocial and health problems (Dubicka & Theodosiou, 2020; Throuvala et al., 2021a). It needs to be acknowledged that we need to be careful not to overpathologise everyday behaviours (Billieux et al., 2015). In our reports (Griffiths et al., 2018; Kuss et al., 2019) for the UK Government Select Committee for Digital, Culture, Media and Sports (DCMS), we have showed that problematic gaming and social media use can have detrimental impacts on the users' mental health and wellbeing. According to a report of the Royal College of Psychiatrists on technology use and the mental health of children and young people (Dubicka & Theodosiou, 2020), problematic technology use is associated with developmental delays in young children, inattention (Pang & Hu, 2024), decreases in academic performance and grades (Amez & Baert, 2020), obesity (Aghasi et al., 2020), changes in brain function (Kuss et al., 2018) and development (Firth et al., 2019), mental health problems including anxiety, depression and life satisfaction (González-Nuevo et al., 2022), addiction (Gugliandolo et al., 2020), ADHD (Thorell et al., 2024), sleep (Burnell et al., 2022), body image disturbances (Ryding & Kuss, 2020) and eating disorders (Smahelova et al., 2020), decreased wellbeing (Dienlin & Johannes, 2020), self-harm and suicide (Twenge, 2020), as well as psychosocial problems, including online bullying and harassment (Betts et al., 2022). Moreover, young people with pre-existing mental health conditions may be more likely to experience negative effects as a consequence of their social media use relative to people without mental health problems (Dubicka & Theodosiou, 2020). Overall, a recent *meta*-analysis (Lozano-Blasco et al., 2022) revealed that vulnerability is increased with specific individual, educational, socio-family, and cultural factors, indicating that we are looking at a complex problem.

From a clinical perspective, cases need to be evaluated on an individual basis taking into consideration mental health status and previous diagnoses, the individual's context, as well as the specific behaviours engaged in (Kuss & Pontes, 2019). This detailed evaluation will also benefit the development of effective treatments, improve access to clinical support, sustain relapse prevention, and ensure that stigma as a consequence of diagnosis and treatment is reduced (Chadha et al., 2024).

For instance, there are myriad activities one can engage in on social media, from socializing to reading the news, to playing games, running a business, and more. To establish addiction, a single specific substance or activity must be pointed to. Social media contain a number of possible activities, any that allow web 2.0 activities to produce, share and work together on content online. Social networking, more specifically, denotes partaking in online communities based on shared interests, and may become addictive when the user experiences traditional addiction symptoms, including salience, mood modification, tolerance, withdrawal, relapse and conflict (akin to more traditional substance-related addictions and behavioural addictions) (Kuss & Griffiths, 2017). To say social media is addictive when it is only certain behaviours that may become habit forming is like saying all beverages are addictive, when in fact, only those that contain an addictive substance (i.e., alcohol) are. To advance the literature we need to get away from speaking in broad strokes that raise panic, when we still need to identify the specific activities within social media that are habit forming and/or cause harm. Otherwise, we risk fuelling calls for legislation that restrict access to youth which may actually cause harm to those who were benefiting. We are already seeing calls for policy to restrict social media access to youth. Just as we would not want to cut people off of consuming all beverages because some of them may be addictive, it makes little sense to cut off youth from social media because some uses may be unhealthy. For some technology users who experience different types of online harms, professional help may be required.

The classification of problematic technology use is relevant as it can support diagnosis, clinical dialogue, treatment and reliability in research. For instance, it is a commonly held misconception that people can use the internet in a problematic way. It is not the internet that can be used in a problematic way, but the activities they engage in on the internet, including, but not limited to, gaming and social networking. This differentiation is important as engaging in different online behaviours may impact users in different ways. Rather than using the umbrella term 'internet addiction', considering the specific problematic behaviours users engage in appears more precise from a nosological point of view. Accordingly, the World Health Organization (2019) included *Gaming Disorder* in the most recent eleventh edition of their International Classification of Diseases (ICD-11), effective from January 2022, as the only other officially recognised behavioural addiction next to Gambling Disorder. *Gaming Disorder* is distinguished by loss of control over the activity, prioritising gaming over other interests and daily activities, and continuing or exacerbating gaming irrespective of negative consequences. This behavioural pattern results in significant impairment for the individual and can be diagnosed if present for a minimum period of twelve months.

In addition to the commonly applied diagnostic perspective to evidence mental health impacts, accumulating neurobiological evidence supports the mental disorder status of *Gaming Disorder*, in line with the development of the Research Domain Criteria (RDoC) as a basis for understanding mental disorders, proposed by the US National Institute for Mental Health (NIMH, 2008). This approach takes at its starting point neurobehavioural functioning which can be assessed objectively, therewith overcoming the limitations of a symptom-based approach in the form of the diagnostic perspective, which can be considered subjective (Liu et al., 2019). In the context of Gaming Disorder as an example of online harms, neurobiological measurements are needed for the purpose of elucidating the extent of the problem. In line with the premises of the addiction syndrome model (Shaffer et al., 2004), research in the field has shown that Gaming Disorder has many parallels with more traditional substance-related addictions on a number of levels, including molecular, neurocircuitry, cognition and behaviour. Relative to healthy controls, people with Gaming Disorder have decreased response-inhibition and emotion regulation, impaired prefrontal cortex functioning and diminished cognitive control, their working memory and decision-making capacities may be impacted, as is their poorer visual and auditory functioning. A recent systematic literature review furthermore reveals that extensive video gaming is associated with detrimental cognitive function changes as indicated by brain imaging studies of pro gamers and individuals with Gaming Disorder (Choi et al., 2021). Moreover, problematic gamers are more likely to have reward deficiency syndrome (Kuss et al., 2018). In a longitudinal study (Jeong et al., 2020), it was also found that ADHD and playing online games for over four hours daily was associated with Gaming Disorder. Additionally, the results of a recent experimental longitudinal study indicated that abstaining from gaming for two weeks reduces Gaming Disorder, stress, and anxiety, and simultaneously increases mental health. Consequently, there is scientific evidence in the form of clinical experience and neurobiological research underpinning the notion that Gaming Disorder can be considered an online harm for a minority of problematic gamers.

The ICD-11 category of "other specified disorders due to addictive behaviours" may subsume other potentially addictive online behaviours, such as social media use and online shopping, whilst problematic pornography use and cybersex may be considered amongst the umbrella term of Compulsive Sexual Behaviour Disorder (World Health Organization, 2019). Leaked Facebook research revealed using Instagram, a Facebook-owned picture-based platform, makes 32 % of adolescent female users feel worse about themselves psychologically and physically (Vaidhyanathan, 2021), with detrimental implications for their mental health (Ryding & Kuss, 2020). Similarly, it is reported that up to 9.3 % of individuals under 18 years have gaming addiction problems (Kuss &

Pontes, 2019). Overall, there is less empirical evidence available to support a possible disorder status of disordered social media use in comparison to Gaming Disorder. Some studies however indicate there are neurobiological differences in terms of brain function and anatomy in people who may be addicted to using social media, similar to those found in individuals diagnosed with other substance-related and behavioural addictions (He et al., 2017; Montag et al., 2018; Nasser et al., 2020; Peng et al., 2022). Accordingly, researchers have called for including social media disorder in the diagnostic manuals (Paschke et al., 2021). Taken together, there is a growing evidence base indicating that problematic technology use as exemplified by problematic gaming and social media use may lead to online harms. Online harms are a public health concern (Department for Digital Culture Media & Sport, 2020).

3. Online harms are a multistakeholder issue

A multistakeholder approach is needed to prevent online harms from occurring in the first place and to tackle its consequences and repercussions. This approach calls for collaboration between governments, parents, schools, the industry, and healthcare services on an international scale (Kuss, 2021; Throuvala et al., 2021a), as indicated subsequently. The UK government has recognised problematic technology use and in their Online Harms White Paper (Department for Digital Culture Media & Sport, 2020) set out its ambition to make the UK the safest place in the world to go online to set the global standard for a risk-based, proportionate regulatory framework. Accordingly, the Online Safety Bill (UK Parliament, 2021) focuses on the duty of care of online service providers to mitigate risk and protect child and adult users. Similarly, the European Commission has put forward the Digital Services Act, which aims to "prevent illegal and harmful activities online" and to ensure user safety and the protection of human rights (European Commission, 2023). In addition to this, some countries, notably Australia, have now banned social media for children under the age of 16 years (Ritchie, 2024), indicating both, an increased awareness of possible detrimental consequences of problematic technology use on vulnerable young users, as well as the understanding that there is a need for action and taking responsibility on behalf of politics and national governments.

In terms of what governments can do, recommendations have been made to follow the South Korean model (King et al., 2018). South Korea has eight ministries which are supporting their strategy on problematic technology use and gaming in terms of prevention, the National Information Society Agency, which oversees Internet addiction centres, The Korea Youth Counseling and Welfare Institute, supporting counselling approaches, as well as numerous public education programmes, which aid the public in discerning possible risks and communicating ways to tackle emerging problems. Using the South Korean model as an example par excellence may benefit other countries and governments, especially when considering both prevention as well as treatment approaches.

Research indicates that parents are important stakeholders as they play important roles in their children's technology beliefs and behaviours (Hammer et al., 2021). Parents perceive their role in mediating their children's online behaviours in terms of a dynamic process derived from everyday lives and interchanges more so than specific behavioural prescriptions, where open communication and establishing a trusting relationship are favoured (Symons et al., 2017). Moreover, there are a number of recommendations parents wish to make to ensure their children can use digital technologies in a safe manner. Parents indicate that educators and schools have a responsibility to educate children and their parents about the digital world, support prevention of online harms, raise awareness and increase mental health literacy, reduce online harms and associated negative consequences, and teach skills necessary for growing up in the digital age (Throuvala et al., 2021b).

In terms of the industry, calls have been made for corporate social responsibility. A cause for concern regarding the practices of the gaming industry emerges with the extent to which potentially problematic content such as 'loot boxes' (i.e., in-game microtransactions paid for in real currency) and 'skins' (i.e., cosmetic items paid for with real currency) are included in many modern games, leading to calls for action to protect gamers (Zendle et al., 2019). Accessible items and their monetary value are suited to individual gamers based on their individual gaming behaviours, preferences and earlier in-game expenditure. Ultimately, by including items such as loot boxes and skins in the games they develop, the gaming industry exploits gamers and disregards consumer protection (King et al., 2019). Accordingly, loot boxes have been outlawed in some countries (e.g., Japan, The Netherlands and Belgium) and significantly restricted in others (e.g., China) (Straub, 2020). Similarly, the social media industry is coming under increased scrutiny considering their negligence in protecting vulnerable users. In the UK, the case of Molly Russell has been instrumental in forcing Meta, the parent company behind the visual-based social media platform Instagram, to court and to take action. Molly took her own life after having been exposed to inappropriate and dangerous content on the platform (Meaker, 2022). In their report, the UK media regulator Ofcom (2022) stated that the significant majority of children from the ages of three to 15 years use social media in Great Britain, nearly half of teenage internet users have experienced possible harms when using social media. Molly's case is indicative of the potential online harms vulnerable young people are exposed to when using social media, emphasising the need to increase corporate social responsibility and safeguard users. What is more, gaming and social media industries are encouraged to collaborate with independent researchers with whom they share their data in order to provide an accurate and objective account of the possible impact technology use may have on users, both positive and negative.

From the perspective of healthcare services, the UK National Health Service (NHS) has warned of the potential pathogenic impacts of loot boxes leading to gambling addiction (NHS England, 2020). Accordingly, NHS long-term plan includes significant provisions to improve mental health in youth (NHS, 2019), leading to the establishment of the National Centre for Gaming Disorders in London, the first NHS clinic to treat gaming addiction in the UK. This comes alongside a range of established healthcare and prevention provisions across the world, led by South-East Asian countries (King et al., 2018).

Taken together, a multistakeholder approach will bring the relevant parties together to foster change; change in how young people and their parents are educated about possible online harms and how awareness is raised among the public; change in how technology industries must take seriously their corporate social responsibility and engage in data sharing practices with independent research bodies and researchers; and change providing additional clinical support for those who are in need. Multiple stakeholders can be brought together to initiate and maintain regular dialogue via relevant international conferences (for instance, the annual International Conference on Behavioral Addictions, led by the International Society for the Study of Behavioral Addictions [ISSBA]), and expert meetings (e.g., those led by the World Health Organization on the public health implications of addictive behaviours). Opening these conferences and meetings up to the wider group of stakeholders beyond scientists, clinicians and healthcare providers may benefit the development of most effective strategies for prevention and treatment. In addition to this, further research is needed which would better establish a causal relationship between specific types of uses of technology and the specific harms that may be experienced as a consequence of problematic use.

4. Conclusion

Technology use has become the status quo and offers a variety of benefits to the users. Recent research however suggests that for a small minority of users, online harms including problematic use of video games and social media may lead to disordered behaviour, which may be associated with various mental and physical health and wellbeing

concerns. Online harms including problematic gaming and social media use have become serious public health concerns in the 21st century. There is considerable evidence they have negative impacts on users' mental health and wellbeing. Despite this, research on online harms is (i) limited, especially with regards to disordered behaviours beyond the officially recognised Gaming Disorder, and (ii) lacks the specific and objective data required to implement effective interventions. The lack of transparency and data sharing approaches on behalf of the relevant industries (including the gaming industry and the social media industry) is especially concerning as an independent assessment of user data may provide important answers to the questions of when user behaviour may become problematic. Opportunities may arise through understanding technology use behaviours more fully – the industry needs to provide access to their data so that independent scientists can evaluate these, and together, strategies can be developed to support beneficial technology use and promote digital literacy, whilst preventing problematic and harmful use from occurring in the first place.

The clinical implications are poorly understood, prevention approaches are in their infancy. For instance, there is currently limited knowledge about how specific treatment approaches support users over the long term beyond treatment completion (i.e., via katamnestic data). We furthermore do not know much about which prevention approaches may be most appropriate for different age and cultural groups. There is no 'one size fits all' approach and the individual and sociocultural context of technology users must be taken into consideration when evaluating the most effective strategies for prevention, research and treatment. This may help address some of the controversies and challenges identified in terms of questioning the extent to which people may become addicted to using technologies in the first place, as the issue of overpathologising of everyday behaviours has been quite validly raised (Billieux et al., 2015).

There is clearly a need for a multistakeholder approach, necessitating the collaboration between governments, parents, schools, the industry, and healthcare services on an international scale. From a European perspective, we have made the recommendations to tackle online harms by (i) promoting and disseminating applied research and information on responsible internet use and prevention, (ii) promoting and educating about healthy online and offline behaviours, and (iii) supporting communities and those in the immediate context of internet users (Lopez-Fernandez & Kuss, 2020). Internet use has become the status quo, and we have a collective responsibility to safeguard users and make the internet a safe space that benefits society.

CRediT authorship contribution statement

Daria J. Kuss: Writing – review & editing, Writing – original draft, Investigation, Conceptualization.

Declaration of competing interest

The author declares that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

References

Aghasi, M., Matinfar, A., Golzarand, M., Salari-Moghaddam, A., & Ebrahimpour-Koujan, S. (2020). Internet use in relation to overweight and obesity: A systematic review and meta-analysis of cross-sectional studies. *Advances in Nutrition, 11*(2), 349–356. https://doi.org/10.1093/advances/nmz073

Amez, S., & Baert, S. (2020). Smartphone use and academic performance: A literature review. *International Journal of Educational Research, 103*, Article 101618. https://doi.org/10.1016/j.ijer.2020.101618

Betts, L. R., Spenser, K. A., & Baguley, T. (2022). Describing disclosure of cybervictimization in adolescents from the united kingdom: The role of age, gender, involvement in cyberbullying, and time spent online. *The Journal of Genetic Psychology, 183*(1), 40–53. https://doi.org/10.1080/00221325.2021.2001413

Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions, 4*, 119–123. https://doi.org/10.1556/2006.4.2015.009

Boyd, D. (2012). Participating in the always-on lifestyle. In M. Mandiberg (Ed.), The Social Media Reader. New York University Press.

Burnell, K., George, M. J., Jensen, M., Hoyle, R. H., & Odgers, C. L. (2022). Associations between adolescents' daily digital technology use and sleep. *Journal of Adolescent Health, 70*(3), 450–456. https://doi.org/10.1016/j.jadohealth.2021.09.033

Chadha, Y., Patil, R., Toshniwal, S., & Sinha, N. (2024). Internet addiction management: A comprehensive review of clinical interventions and modalities. *Cureus, 16*(3), Article e55466. https://doi.org/10.7759/cureus.55466

Choi, E., Shin, S. H., Ryu, J. K., Jung, K. I., Hyun, Y., Kim, J., & Park, M. H. (2021). Association of extensive video gaming and cognitive function changes in brain-imaging studies of pro gamers and individuals with Gaming Disorder: Systematic literature review. *JMIR Serious Games, 9*(3), Article e25793. https://doi.org/10.2196/25793

Department for Digital Culture Media & Sport. (2020). Online harms white paper. Consultation outcome. https://www.gov.uk/government/consultations/online-harms-white-paper.

Dienlin, T., & Johannes, N. (2020). The impact of digital technology use on adolescent well-being Dialogues in Clinical Neuroscience, 22(2), 135-142. https://doi.org/10.31887/DCNS.2020.22.2/tdienlin.

Dixon, S. (2022). Social media - Statistics & facts. Statista. Retrieved 01.11.2022 from https://www.statista.com/topics/1164/social-networks/#dossierKeyfigures.

Dubicka, B., & Theodosiou, L. (2020). Technology use and the mental health of children and young people. *Royal College of*. Psychiatrists.

European Commission. (2023). The Ditial Services Act - Ensuring a safe and accountable online environment. European Commission,. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act_en#:~:text=Digital%20Services%20Act%20(DSA)%20overview&text=Its%20main%20goal%20is%20to,and%20open%20online%20platform%20environment.

Firth, J., Torous, J., Stubbs, B., Firth, J. A., Steiner, G. Z., Smith, L., Alvarez-Jimenez, M., Gleeson, J., Vancampfort, D., Armitage, C. J., & Sarris, J. (2019). The "online brain": How the Internet may be changing our cognition. *World Psychiatry, 18*(2), 119–129. https://doi.org/10.1002/wps.20617

González-Nuevo, C., Cuesta, M., Postigo, Á., Menéndez-Aller, Á., García-Fernández, J., & Kuss, D. J. (2022). Using social networking sites during lockdown: Risks and benefits. *Psicothema, 34*(3), 365–374. https://doi.org/10.7334/psicothema2022.51

Griffiths, M., Lopez-Fernandez, O., Throuvala, M., Pontes, H. M., & Kuss, D. J. (2018). Excessive and problematic use of social media in adolescence: A brief overview. Report submitted to the UK Parliament Science and Technology Committee (Impact of social media and screen-use on young people's health inquiry).

Griffiths, M. D., Kuss, D. J., & Ortiz de Gortari, A. (2017). Videogames as therapy: An updated selective review of the medical and psychological literature. *International Journal of Privacy and Health Information Management, 5*(2), 71–96. https://doi.org/10.4018/IJPHIM.2017070105

Gugliandolo, M. C., Costa, S., Kuss, D. J., Cuzzocrea, F., & Verrastro, V. (2020). Technological addiction in adolescents: The interplay between parenting and psychological basic needs. *International Journal of Mental Health and Addiction, 18*(5), 1389–1402. https://doi.org/10.1007/s11469-019-00156-4

Hammer, M., Scheiter, K., & Stürmer, K. (2021). New technology, new role of parents: How parents' beliefs and behavior affect students' digital media self-efficacy. *Computers in Human Behavior, 116*, Article 106642. https://doi.org/10.1016/j.chb.2020.106642

He, Q., Turel, O., & Bechara, A. (2017). Brain anatomy alterations associated with Social Networking Site (SNS) addiction. *Scientific Reports, 7*, 45064. https://doi.org/10.1038/srep45064

Hepp, A. (2019). *Deep mediatization*. Routledge.

Jeong, H., Yim, H. W., Lee, S. Y., Lee, H. K., Potenza, M., & Lee, H. (2020). Factors associated with severity, incidence or persistence of internet gaming disorder in children and adolescents: A 2-year longitudinal study. *Addiction, 116*(7), 1828–1838. https://doi.org/10.1111/add.15366

Kaye, L. K., Kowert, R., & Quinn, S. (2017). The role of social identity and online social capital on psychosocial outcomes in MMO players. *Computers in Human Behavior, 74*, 215–223. https://doi.org/10.1016/j.chb.2017.04.030

Khan, G. F., Swar, B., & Lee, S. K. (2014). Social media risks and benefits: A public sector perspective. *Social Science Computer Review, 32*(5), 606–627. https://doi.org/10.1177/0894439314524701

King, D. L., Delfabbro, P. H., Doh, Y. Y., Wu, A. M. S., Kuss, D. J., Pallesen, S., Metzoni, R., Carragher, N., & Sakuma, H. (2018). Policy and prevention approaches for disordered and hazardous gaming and Internet use: An international perspective. *Prevention Science, 19*(2), 233–249. https://doi.org/10.1007/s11121-017-0813-1

King, D. L., Delfabbro, P. H., Gainsbury, S. M., Dreier, M., Greer, N., & Billieux, J. (2019). Unfair play? Video games as exploitative monetized services: An examination of game patents from a consumer protection perspective. *Computers in Human Behavior, 101*, 131–143. https://doi.org/10.1016/j.chb.2019.07.017

Kuss, D. J. (2017). Mobile technology and social media: The "extensions of man" in the 21st Century. *Human Development, 60*, 141–143. https://doi.org/10.1159/000479842

Kuss, D. J. (2021). Risk reduction and harm prevention in technology use. •: A commentary on Swanton et al.'s (2020) 'Problematic risk-taking involving emerging

technologies: a stakeholder framework to minimize harms'. *Journal of Behavioral Addictions, 9*(4), 895–897. https://doi.org/10.1556/2006.2020.00079
Kuss, D. J., & Griffiths, M. D. (2017). Social Networking Sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health, 14*(3), E311. https://doi.org/10.3390/ijerph14030311
Kuss, D. J., & Pontes, H. M. (2019). Internet addiction. Advances in Psychotherapy - Evidence-based practice (Vol. 47). Hogrefe.
Kuss, D. J., Pontes, H. M., & Griffiths, M. D. (2018). Neurobiological correlates in Internet gaming disorder: A systematic literature review. *Frontiers in Psychiatry - Psychopathology, 8*(9), 166. https://doi.org/10.3389/fpsyt.2018.00166
Kuss, D. J., Throuvala, M., Pontes, H. M., Nuyens, F., Burleigh, T., & Griffiths, M. D. (2019). Tackling digital and gaming addiction: A challenge for the 21st Century. Report submitted to the UK Parliament's Select Committee on Digital, Culture, Media and Sport relating to Immersive and Addictive Technologies. C. UK Parliament's Select Committee on Digital, Media and Sport.
Liu, Q., Woo, M., Zou, X., Champaneria, A., Lau, C., Mubbashar, M. I., Schwarz, C., Gagliardi, J. P., & Tenenbaum, J. D. (2019). Symptom-based patient stratification in mental illness using clinical notes. *Journal of Biomedical Informatics, 98*, Article 103274. https://doi.org/10.1016/j.jbi.2019.103274
Lopez-Fernandez, O., & Kuss, D. J. (2020). Preventing harmful Internet use-related addiction problems in Europe: A literature review and policy options. *International Journal of Environmental Research and Public Health, 17*(11), 3797. https://doi.org/10.3390/ijerph17113797
Lozano-Blasco, R., Latorre-Martínez, M. P., & Cortés-Pascual, A. (2022). Screen addicts: A meta-analysis of internet addiction in adolescence. *Children and Youth Services Review, 135*, Article 106373. https://doi.org/10.1016/j.childyouth.2022.106373
Meaker, M. (2022). How a British teen's death changed social media. Wired. https://www.wired.co.uk/article/how-a-british-teens-death-changed-social-media.
Montag, C., Zhao, Z., Sindermann, C., Xu, L., Fu, M., Li, J., Zheng, X., Li, K., Kendrick, K. M., Dai, J., & Becker, B. (2018). Internet Communication Disorder and the structure of the human brain: Initial insights on WeChat addiction. *Scientific Reports, 8*(1), 2155. https://doi.org/10.1038/s41598-018-19904-y
Naslund, J. A., Bondre, A., Torous, J., & Aschbrenner, K. A. (2020). Social media and mental health: Benefits, risks, and opportunities for research and practice. *Journal of Technology in Behavioral Science, 5*(3), 245–257. https://doi.org/10.1007/s41347-020-00134-x
Nasser, N. S., Sharifat, H., Rashid, A. A., Hamid, S. A., Rahim, E. A., Loh, J. L., Ching, S. M., Hoo, F. K., Ismail, S. I. F., Tyagi, R., Mohammad, M., & Suppiah, S. (2020). Cue-reactivity among young adults with problematic Instagram use in response to Instagram-themed risky behavior cues: A pilot fMRI study. *Frontiers in Psychology, 11*, Article 556060. https://doi.org/10.3389/fpsyg.2020.556060
NHS. (2019). The NHS long term plan. https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf.
NHS England. (2020). Country's top mental health nurse warns video games pushing young people into 'under the radar' gambling. NHS England,. Retrieved 04.11.2022 from https://www.england.nhs.uk/2020/01/countrys-top-mental-health-nurse-warns-video-games-pushing-young-people-into-under-the-radar-gambling/.
NIMH. (2008). RDoC - Research Domain Criteria initiative. Retrieved 03.08.2022 from https://www.nimh.nih.gov/research/research-funded-by-nimh/rdoc/about-rdoc#framework-graphic.
Nuyens, F., Kuss, D. J., Lopez-Fernandez, O., & Griffiths, M. D. (2018). The empirical analysis of non-problematic video gaming and cognitive skills: A systematic review. *International Journal of Mental Health and Addiction, 17*(2), 389–414. https://doi.org/10.1007/s11469-018-9946-0
O'Reilly, M., Dogra, N., Hughes, J., Reilly, P., George, R., & Whiteman, N. (2018). Potential of social media in promoting mental health in adolescents. *Health Promotion International, 34*(5), 981–991. https://doi.org/10.1093/heapro/day056
Ofcom. (2022). Online nation 2022 report. https://www.ofcom.org.uk/_data/assets/pdf_file/0023/238361/online-nation-2022-report.pdf.
Pang, H., & Hu, Z. (2024). Detrimental influences of social comparison and problematic WeChat use on academic achievement: Significant role of awareness of inattention. *Online Information Review*. https://doi.org/10.1108/OIR-05-2024-0316
Paschke, K., Austermann, M. I., & Thomasius, R. (2021). ICD-11-based assessment of Social Media Use Disorder in adolescents: Development and validation of the Social Media Use Disorder Scale for adolescents [Original Research]. *Frontiers in Psychiatry, 12*. https://doi.org/10.3389/fpsyt.2021.661483
Peng, W., Hao, Q., Gao, H., Wang, Y., Wang, J., Tu, Y., Yu, S., Li, H., & Zhu, T. (2022). Functional neural alterations in Pathological Internet Use: A meta-analysis of neuroimaging studies. *Front Neurol, 13*, Article 841514. https://doi.org/10.3389/fneur.2022.841514
Ritchie, H. (2024). Australia approves social media ban on under-16s. BBC News. https://www.bbc.co.uk/news/articles/c89vjj0lxx9o.
Ryding, C. F., & Kuss, D. J. (2020). The use of social networking sites, body image dissatisfaction and Body Dysmorphic Disorder: A review of psychological research. *Psychology of Popular Media Culture, 9*(4), 412–435. https://doi.org/10.1037/ppm0000264
Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12*(6), 367–374. https://doi.org/10.1080/10673220490905705
Smahelova, M., Drtilova, H., Smahel, D., & Cevelicek, M. (2020). Internet usage by women with eating disorders during illness and recovery. *Health Communication, 35*(5), 628–636. https://doi.org/10.1080/10410236.2019.1582135
Straub, N. (2020). Every country with laws against loot boxes (& what the rules are). ScreenRant. https://screenrant.com/lootbox-gambling-microtransactions-illegal-japan-china-belgium-netherlands/.
Symons, K., Ponnet, K., Walrave, M., & Heirman, W. (2017). A qualitative study into parental mediation of adolescents' internet use. *Computers in Human Behavior, 73*, 423–432. https://doi.org/10.1016/j.chb.2017.04.004
Thorell, L. B., Burén, J., Ström Wiman, J., Sandberg, D., & Nutley, S. B. (2024). Longitudinal associations between digital media use and ADHD symptoms in children and adolescents: A systematic literature review. *European Child & Adolescent Psychiatry, 33*(8), 2503–2526. https://doi.org/10.1007/s00787-022-02130-3
Throuvala, M. A., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2021a). Perceived challenges and online harms from social media use on a severity continuum: A qualitative stakeholder perspective. *International Journal for Environmental research and Public Health, 18*(6), 3227. https://doi.org/10.3390/ijerph18063227
Throuvala, M. A., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2021b). Policy recommendations for preventing problematic internet use in schools: A qualitative study of parental perspectives. *International Journal for Environmental research and Public Health, 18*(9), 4522. https://doi.org/10.3390/ijerph18094522
Twenge, J. M. (2020). Increases in depression, self-harm, and suicide among U.S. adolescents after 2012 and links to technology use: Possible mechanisms. Psychiatry Research & Clinical. *Practice, 2*(1). https://doi.org/10.1176/appi.prcp.20190015
UK Parliament. (2021). Online Safety Bill. Government bill. UK Parliament. Retrieved from https://bills.parliament.uk/bills/3137.
Online Safety Act 2023 (c. 50), UK Parliament (2023).
Vaidhyanathan, S. (2021). Leaks exposed how toxic Facebook and Instagram are to teen girls and, well, everyone. The Guardian. Retrieved 03.08.2022 from https://www.theguardian.com/commentisfree/2021/sep/18/facebook-instagram-zuckerberg-teenagers.
WePC. (2022). Video game industry statistics, trends and data in 2022. WePC. Retrieved 01.11.2022 from https://www.wepc.com/news/video-game-statistics/.
World Health Organization. (2019). International Classification of Diseases (ICD-11). World Health Organization.
Zendle, D., Meyer, R., & Over, H. (2019). Adolescents and loot boxes: Links with problem gambling and motivations for purchase. *Royal Society Open Science, 6*(6), Article 190049. https://doi.org/10.1098/rsos.190049