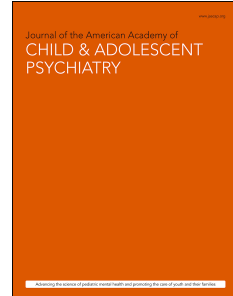


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The Potential Harm of Gambling Streams to Minors

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Videogames are designed to attract the attention of a potentially diverse audience. One of the most popular videogame-related content distributor sites is *Twitch*, which provides daylong access to all kinds of gaming-related content through independent content creators. This platform, compared to *YouTube* (the world's popular video-based content distributor) has one important difference. Namely, it dominantly provides real-time video content sharing (i.e., streaming). The total audience of gaming's live streaming in 2021 was approximately 810 million gamers worldwide, expected to grow to 921 million in 2022. While most of the viewers are adults, 17% of male and 11% of female audience are minors, aged between 10 and 20 years (<https://newzoo.com/insights/articles/gamings-live-streaming-audience-will-hit-one-billion-next-year-1-4-billion-by-2025>). Risk assessment in this field is still missing, while some dangers are presumably related to the type of content shared. As gambling-related videos draw more and more attention from viewers, the possible risk of age-inappropriate content access has appeared. Future research and policy-making should consider exploring this area to protect young consumers.

Gambling and Gaming Convergence

There is a growing convergence between videogames and gambling. Firstly, it is more common to be able to get financial benefits by videogame playing (streaming, professional esports) making it more akin to gambling. Secondly, videogames are more likely to include several gambling-like elements, such as loot boxes, token wagering, and real-money videogaming. Thirdly esports betting and virtual currency-based casino games (a.k.a. social casino games) are becoming increasingly popular¹. Many similarities can also be found in the behavioral conditioning aspect of videogames and gambling activities, since both of them use the principles of intermittent variable ratio reinforcement schedules to keep the players involved,^{2,3} which can put vulnerable individuals at risk. Those at risk include impulsive individuals, who discount delayed rewards to a greater extent than non-impulsive individuals³, and due to higher level of negative urgency, can experience difficulties dissociating their conditioned emotional responses from neutral stimuli, which can lead to higher levels of craving⁴. Finally, persuasive design elements are used in both gaming and gambling services^{5,6}, which are arguably 'predatory' due to the fact that they comprise numerous psychological ploys (such as near-misses, artificially created 'last minute' deals, flexible pricing of virtual goods), that most users may be unaware of and/or unable to understand. These are sometimes optimized with data collected through behavioral tracking to "*exploit inequalities in information between purchaser and provider*"⁵ (p. 1967.). However, the idea that these systems may be deliberately targeting minors is unfounded at present, but it is likely that children and adolescents have less capacity to be aware of them, understand their function and consequently, be able to protect themselves from such exploitative practices.

The Growing Popularity of Gambling Streams

While most of the users are interested in videogame-related content, the popularity of gambling content on these platforms is rising (<https://newzoo.com/insights/articles/gamings-live-streaming-audience-will-hit-one-billion-next-year-1-4-billion-by-2025>). This might be a consequence of some popular videogame-related content creators moving towards presenting gambling-related streams, playing with virtual slot machines or betting on roulette. This led to a scandal in the *Twitch* community, resulting in various influential streamers having a debate about this issue, some admitting that they are “addicted” to gambling and describing gambling streams as a dangerous and morally questionable activity (<https://www.invenglobal.com/articles/14636/i-wish-i-could-take-it-back-xqc-apologizes-for-gambling-streams>).

At present, no restrictions are in effect to regulate the access to streams, including online gambling, other than some creators use an indication that their content is only suitable for adults or add an “18+” section to their titles. In addition to the possible ineffectiveness of these restrictions, without a general guideline or policy on these sites, several content creators do not even implement any type of notification. There are presently two site-based regulations that *Twitch* has introduced. The first is the ban of streaming online gambling activity from unregulated gambling sites (<https://www.bbc.com/news/technology-62982509.amp>). The second applies to the sharing of referral codes, which are tools of gambling advertisements, generally shared as a part of gambling sponsorship contracts between streamers and sites providing online roulette, dice games or slots games (<https://www.invenglobal.com/articles/14809/twitch-bans-gambling-related-links-and-referral-codes>). Referral codes provide benefits for both the advertiser and the user, mostly in the form of currency that can be used for gambling at online casinos. At present, there is a complete prohibition on *Twitch* for sharing links and referral codes directing to sites offering several types of online gambling activities.

Social learning Theory, Gambling-related Media Exposure and related Age Restrictions

According to the social learning theory framework, individuals can learn specific behaviors by observation, and behavioral change is affected by the anticipation of the expected consequences⁷. Popular streamers can become role model figures for minors. Consequently, based on previous research findings, their content can potentially influence intentions to gamble by modifying attitudes toward gambling-related content⁸. Adolescents are specifically vulnerable to gambling-related risk and earlier initiation of gambling behavior is associated with being at higher risk for problem gambling⁹ and more severe medical and psychiatric problems later¹⁰. It is even more concerning that one study

reported the rate of suicide attempts was nine times higher among males and 4.9 times higher among females who screened positive for problem gambling¹¹.

Age restriction of access to gambling services is prevalent across Europe, with most countries (60%-73% depending on the type of game) setting the legal age for gambling to 18 years for land-based gambling activities. Online gambling is also frequently prohibited (43%-73% of jurisdictions) without considering possible legal age for use¹². Gambling advertisements among youth raises several concerns. While most adolescents respond dismissively to the underlying message of gambling ads, indicating that “*winning is easy*”, some of them react to these messages with the initiation of gambling¹³. Gambling streams fulfil the role of hidden gambling advertisements, providing an alternative solution to bypass all policies and legal regulations to reach out to a wide audience, including numerous minors globally. Thereby, the early exposure to deceptive advertisement practices raises concerns such as the “passive” video consumption of gambling-related content and whether it is a completely harmless activity for minors.

The Rise of Gambling in the Underage Population

It is still unknown how many children are exposed to gambling-related content through streaming services and other video-based content providers. Despite the wide range of regulations, the use of gambling services is present in the adolescent population and a small, but significant proportion shows problems related to their gambling behavior¹⁴. Based on the critics of the strict Chinese regulations on videogame use, only empirically-based policy interventions combined with the self-regulation of the streaming service providers should be implemented to effectively prevent gambling-related psychological harm^{15,16}.

Conclusion

There is an increasing need for both research and regulations regarding the effects of videogame and gambling-related content consumption, with a specific focus on child and adolescent audiences. Furthermore, studies of regulation effectiveness are also necessary to enhance the prevention of financial and psychological harm to minors.

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