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Invited review

## Gambling in children and adolescents

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### INTRODUCTION

This paper reviews the current evidence concerning gambling among children and adolescents, discusses emerging issues with online gambling and gaming, and presents arguments for improved prevention, legislation, and treatment of gambling problems in young people. In the UK Gambling Act 2005<sup>1</sup>, children are defined as those aged under 16 years, and young people are defined as those aged 16-18 years. The term adolescence describes the transition from childhood to adulthood, and involves biological, psychological, and social changes. These changes do not always occur in parallel, and the age range of adolescence varies widely, but usually occurs between 13 and 19 years.

#### ***Why are children vulnerable to gambling?***

Children are at risk of problems with gambling because of developmental and cognitive immaturities, as well as a susceptibility to both family and peer influences and marketing campaigns. Cognitive immaturities include illusions of control over outcomes<sup>2</sup> and limited understanding of probability and statistics<sup>3</sup>. Major changes occur in the child's brain during puberty, and in early adolescence executive function is not fully developed, which increases impulsivity and risk-taking behaviours<sup>4</sup>.

Experimentation of new activities with peers is a normal part of growing up, and betting on card games and dares with friends is very common. Children are also exposed to playing videogames from an early age, and are familiar with the platforms and style used in online gambling<sup>5</sup>. In addition, children are susceptible to advertising, and there is growing concern that they are being targeted by marketing from gambling companies<sup>6</sup> (see below).

#### ***What is the current legislation in the UK?***

The current legislative framework for gambling in the UK stems from the 2005 Gambling Act<sup>1</sup>. From the age of 16 years, individuals are allowed to buy lottery tickets and scratchcards, and participate in football pools. Lottery tickets and scratchcards are available at a wide range of retail outlets, not all of which demand proof of age. Gambling in casinos and betting in bookmakers is permitted from 18 years. Gambling online is also restricted to those 18 years and over, and is now subject to age verification checks by gambling companies. There is no

age restriction on category D machines which include low stake slot machines. Additionally, gambling-like activities are being introduced into videogames through the use of loot boxes<sup>7</sup>, which do not require proof of age, and betting on e-gaming is becoming more widespread. The gaming industry is becoming increasingly online and is more difficult to regulate across international borders.

## **SOURCES OF DATA**

Two major reports published in 2019 provided evidence of the current situation with children and gambling in the UK. The UK Gambling Commission's 2019 report<sup>8</sup> into young people's gambling surveyed an online panel of nearly 3000 children between the ages of 11 and 16 years attending secondary schools in England, Scotland, and Wales. Gambling among adolescents was investigated in a contemporary UK longitudinal cohort, the Avon Longitudinal Study of Parents and Children (ALSPAC), known as Children of the Nineties<sup>9</sup>. At age 17 years, 3757 young participants completed a computer-assisted gambling survey<sup>10</sup>. To summarise current evidence, a search was undertaken in *Medline* and *PsychInfo* for publications since 2010, using terms <gambling> and <(children or adolescents)>. Systematic reviews and population-based studies were selected from economically advantaged countries reporting the prevalence of adolescent problem gambling<sup>11-14</sup> and reviewing risk and protective factors for problem gambling<sup>16-27</sup>. Recent work on gaming and gambling, and on the influence of advertising has also been cited.

## **AREAS OF AGREEMENT**

### ***Recent evidence of frequency of gambling by children in the UK***

The UK Gambling Commission's 2019 report into young people's gambling<sup>8</sup> showed that 36% of 11- to 16-year-olds gambled in the past year, a rate at the lower end of those reported from other European countries<sup>11,12,13</sup>. Rates of gambling in the past week for under 16s were stable at 11%, having fallen from 23% in 2012.

<insert Fig 1 here>

The gender differences in gambling patterns seen in adults<sup>14,15</sup> were also observed with children, with the frequency of gambling in the past week reported by boys (13%) being nearly double that of girls (7%). Young people who said they had gambled in the past seven days spent an average of £17 on gambling during this period. The first experience of gambling for most young people was playing on slot ('fruit') machines, reported by 23% of 11-16 year olds who had ever gambled. The most common gambling activities by children were private betting for money, playing slot machines, and playing the lottery or scratchcards. These activities were similar to previous surveys, but online gambling had increased in frequency in 2018, with 7% reporting gambling online, and 5% of 11-16 year olds stating they had played National Lottery games online, and/or other gambling websites using their parents account (with their permission).

The ALSPAC Gambling study reported on gambling in a longitudinal population-based study in South West England called Children of the Nineties<sup>10</sup>. A total of 3757 young participants aged 17 years completed a computer-assisted gambling survey in which they were asked about their gambling in the last year, and they completed the Problem Gambling Severity Index (PGSI). Participation in any gambling in the past year was reported by 54% of 17-year-olds, with the most common activities being playing scratchcards, playing the lottery, and private betting with friends (see figure 2). Frequent (weekly or more) gambling was reported by 9% overall, but by 17% of males<sup>16</sup>.

<Insert figure 2 here >

### ***Frequency of gambling in children worldwide***

The increased availability of legal gambling in many higher income countries has led to increases in the prevalence of adolescent gambling and to the development of gambling problems among young people<sup>12</sup>. Across Europe, self-reported rates of adolescent gambling in the past year<sup>11,13</sup>, ranged from 36% in Italy to 78% in Iceland, but differences in methodology between studies make comparisons difficult. Although adolescent gambling is an illegal activity in most countries, the prevalence rate of problem gambling in adolescents is higher than adults<sup>14</sup>

### ***What are the associations of childhood gambling?***

The literature confirms a strong association of gambling with being male. This has been widely reported in literature reviews of both adults<sup>14,15</sup> and adolescents<sup>11</sup> and may be due to multiple reasons from many different perspectives, including genetic differences, sex role socialisation, sub-cultural features of gambling, personality differences, motivational gender differences, and differences in psychiatric comorbidity, among others<sup>17</sup>. Other individual characteristics of children who gamble compared to their peers include developmental traits such as hyperactivity<sup>18</sup>, a need for stimulation reflected in high sensation seeking scores<sup>19</sup>, and an external locus of control<sup>10</sup>.

The most important family influence on gambling in childhood is whether the parents gamble. This not only normalises gambling as an adult activity, but parents can also introduce their children to gambling. This appears to be gender specific with mothers being more likely to report gambling on raffle and lottery scratchcards with their children, and fathers being more likely to report engaging in sports betting activities with their children, particularly sons<sup>20</sup>. Studies have shown that low levels of parental supervision are also associated with increased frequency of gambling in adolescence<sup>21</sup>. Wider social and environmental factors associated with early onset of gambling are low socioeconomic status<sup>22</sup>, lower levels of maternal education<sup>23</sup>, and belonging to an ethnic minority<sup>24</sup> or an immigrant community.<sup>25</sup>

### ***Problem gambling in children and adolescents***

Although many children bet and play gambling games for fun with no adverse consequences, a recent systematic review on adolescent gambling<sup>11</sup> concluded that a small but significant minority of adolescents have gambling-related problems. The lifetime worldwide adolescent problem gambling prevalence rates ranged from 1.6 to 5.6%. In North America current (past year) problem gambling prevalence rates ranged from 2.1 to 2.6%, whereas in Europe, current problem gambling prevalence rates ranged from 0.2 to 12.3%. Adolescent problem gambling is more likely to occur among males, and those from ethnic minorities<sup>24</sup>

The rate of problem gambling (using adapted DSM-IV criteria) in the 2018 UK survey of young people<sup>8</sup> was 1.7% (boys 2%; girls 0.7%), with a further 2.7% classified as 'at risk' gamblers. Participants in the ALSPAC cohort at age 17 years completed the Problem Gambling Severity Index (PGSI) and the problem gambling rate was 0.7%, with a further 5.2% classed as moderate-risk gamblers<sup>26</sup>.

A systematic review of the early risk and protective factors for problem gambling by Dowling et al. (2017) organised factors according to a socio-ecological model into individual, relationship, community, and society levels<sup>17</sup>. The individual developmental antecedents of

problem gambling among young people include male gender, impulsivity, sensation seeking, depression, and anti-social or violent behaviour. An under-controlled temperament (observed as early as three-years-old)<sup>27</sup>, impulsivity, and higher sensation seeking scores<sup>19</sup> have been shown to be associated with problem gambling among young people. Problem gamblers are also more likely to gamble online<sup>28</sup>, which could be explained by the situational and structural characteristics of internet gambling, such as its accessibility, affordability, convenience, and anonymity. The experience of winning a large amount of money early in adolescents' playing career is also a predictor of subsequent problem gambling<sup>29</sup>. Relationship influences on gambling problems in adolescents include parental gambling<sup>20</sup>, low levels of parental monitoring in adolescence<sup>21</sup>, and anti-social behaviour among peers<sup>30</sup>. Poor academic performance at school or college is an important community level influence and can be both antecedent or a consequence of problem gambling<sup>31</sup>.

A recent systematic review of risk and protective factors for adolescent problem gambling<sup>17</sup> suggested protective factors included parental supervision of young people and higher socio-economic status. The characteristics of 'low risk gamblers' were explored in ALSPAC by comparing those that gambled regularly aged 17 years but had no problems at 24 years with those that gambled regularly aged 17 years and did show moderate risk/problem gambling at 24 years. These non-problematic regular gamblers were more likely to be female, have higher IQs, have higher internal locus of control, less likely to have conduct problems at 16 years and they did not drink excessively or use drugs. They were also less likely to have mothers who gambled regularly or had problems with gambling<sup>10</sup>.

Adverse consequences of problematic gambling for young people include negative emotional states, poor educational and vocational outcomes, and difficulties in family or peer relationships<sup>26</sup>. Many studies report associations with low mood<sup>32</sup>, but it is difficult to be certain on the direction of the associations between adolescent gambling and depression (i.e., whether adolescents gamble because they are depressed or become depressed because they gamble excessively and become isolated from their peers), because of the lack of longitudinal data. Gupta et al.<sup>33</sup> reported that youths who gamble excessively exhibited coping styles that were more emotion-based, avoidant, and distraction-oriented, and were more likely to engage in other addictive behaviours. The pathways approach to youth gambling<sup>34</sup> proposes that a distinction should be made between behaviourally conditioned problem gamblers (those who gamble as a means of emotional escape and mood regulation), and those young people with a biological vulnerability toward impulsivity and arousal-seeking, with attentional deficits and antisocial traits.

Problem gambling in adolescence shares comorbidities with other potentially addictive behaviours such as alcohol drinking and cigarette smoking<sup>26</sup>. A study of youth gambling in Norway<sup>35</sup> showed that male gender, depression, alcohol abuse, and dissociation were related to problem gambling. At-risk/problem online gambling in adolescence<sup>36</sup> is associated with heavy alcohol use, low peer involvement, and poor academic functioning.

## **AREAS OF CONTROVERSY**

### ***Access of children to slot machines***

One of common ways children in the UK are introduced to gambling is via slot machines, which are highly accessible in pubs, restaurants, amusement arcades and travelling fairs, and can be played with relatively little money. Although many parents view playing slot machines as a harmless activity, this type of gambling is problematic because it involves high event frequencies and immediate rewards, with short interval between stake and payout<sup>37</sup>,

facilitating the maintenance of the behaviour through operant conditioning<sup>38</sup>. There are no age restrictions for using category D gambling machines, and the wide variety of venues in which children can access these activities makes supervision of children's playing very difficult.

### ***Relationship between gaming and gambling in children***

Playing videogames is now so ubiquitous and has become a normal part of childhood, so care needs to be taken when assuming causal pathways leading to early onset of gambling. However, gaming can be very addictive. The latest (fifth) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) tentatively recognised the existence of internet gaming disorder but acknowledges difficulties with definition and the need for further research<sup>39</sup>. Adolescents are receptive to modern forms of gambling because of the apparent similarity between these games and other familiar technology-based games<sup>40</sup>. For instance, the use of loot boxes has become commonplace in videogames where players use real money to buy keys to open the boxes, which contain a chance selection of virtual in-game items<sup>7</sup>. Loot boxes are psychologically similar to gambling because the prizes are undetermined and what is won can be of much less value than the price paid to open them<sup>41</sup>.

The Gambling Commission's report on gambling in young people<sup>8</sup> suggested that there has been an increase in online activity and paying for loot boxes in video gaming. Half of 11-16 year olds have heard of in-game items, and of those 44% have paid money to open loot boxes, and 6% have bet with in-game items on websites outside of the game or privately (e.g., with friends). Another issue is 'skin gambling' within videogames. Skins are cosmetic virtual goods (e.g., an item of character clothing) which has no impact on gameplay itself but which can be used as virtual currency to bet on games of chance. Skins have a real world value (and are arguably a kind of crypto-currency) so the activity would be classed as gambling by most regulatory bodies. Given the gambling-like nature of loot boxes and the availability of skins in videogames, they should arguably be subject to the same age controls as other forms of gambling<sup>42</sup>.

### ***Advertising and promotion of gambling to children***

Although advertising to children is prohibited by the Gambling Act, children are widely exposed to gambling adverts on television and via social media. In recent years, there has been an expansion in sports betting online, and this has been heavily promoted by advertising and marketing attractive to adolescents of online in-play betting on sports, which is more engaged in by males than females<sup>43</sup>. Gambling is also promoted to children via social media. A recent study of Twitter by Demos<sup>44</sup> investigated how children are sharing and re-tweeting messages from gambling companies. The study showed how children and vulnerable groups are active in conversations around gambling, and regularly consume and share highly visual gambling advertising. New types of content are being promoted, particularly around betting on esports which are likely to be more appealing to children and young people, and which make almost no reference to the risks associated with gambling. In order to tackle these problems, existing regulations around access to gambling advertising need to be clarified and enforced.

### **FURTHER RESEARCH NEEDED**

While there has been a steady increase in research examining youth gambling both in the UK and other countries worldwide, there are large knowledge gaps and this is exacerbated by the fact that the field is constantly evolving. Almost all survey research in the area is cross-

sectional (although there are a handful of exceptions). Consequently, more longitudinal studies investigating relationships between variables associated with problem gambling among children and adolescents are needed: for example, whether other comorbidities [e.g., depression, alcohol abuse, etc.] play a role in the development of problem gambling or whether problem gambling plays a role in the development of these comorbidities, or both.

There is also an urgent need to examine activities that blur the lines between gaming and gambling. A recent large-scale study found the more money an individual spent buying loot boxes, the more likely they were to be a problem gambler<sup>45</sup>. However, this does not prove that loot boxes cause problem gambling: it may be that problem gamblers are more attracted to buying loot boxes within video games. This again calls for longitudinal research to examine the nuances between gambling and gaming.

Further research is needed on the role of marketing and advertising in promoting in-play betting among male adolescents and emerging adults, particularly given the empirical studies demonstrating the stronger association between in-play betting and problem gambling than many other types of gambling<sup>46</sup>. In-depth studies are also needed examining the impact on children of gambling advertising on social media, and a broader consideration of how to balance open access of young people to a legal activity while protecting children from early exposure to gambling.

## **IMPLICATIONS FOR CLINICIANS**

The problem of youth gambling among is widespread in economically developed countries, and clinicians need to be aware of this growing and complex phenomenon and its implications for the health of the children and adolescents<sup>47</sup>. Given that children and adolescents are increasingly being exposed to gambling online and on television, and that there are multiple individual, familial and societal risk factors for risky and problem gambling, paediatricians, psychiatrists, and general practitioners have an important role in identifying individuals at risk, in monitoring the consequences of gambling, and to refer for specialist help if needed.

The NHS Long Term Plan in 2019 announced that up to 14 new NHS clinics are being opened across England for the treatment of problem gambling, and that the National Problem Gambling Clinic in London will also offer specialist help for children and young people aged 13 to 25 years. The effective management of gambling disorders in children and adolescents requires working closely with families and providing early screening, assessment, and treatment for problem gambling, to decrease the risk of negative impacts on their mental health and future lives.

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