

**Young People and Gambling in Britain:
A systematic and critical review of the research
literature relating to gaming machine, lottery and
pools coupons practice by children and young
people under 18**

Department for Culture, Media and Sport Technical Report Series

Professor Corinne May-Chahal
Dr Fiona Measham
Morag Brannock
Jude Amos
Paul Dagnall

Department of Applied Social Science
Lancaster University

Technical Paper No. 8
November 2004



TABLE OF CONTENTS

TABLE OF CONTENTS	1 -2
LIST OF TABLES.....	3
EXECUTIVE SUMMARY.....	4
INTRODUCTION.....	6
PROBLEM GAMBLING.....	10
OBJECTIVES	13
METHODOLOGY	14
REVIEW	14
1. Screening Instruments	14
1.1 Problem Gambling Among Adolescent Students in the Atlantic Provinces of Canada: SOGS.....	20
1.2 Pathological Gambling Among Adolescents in America: MAGS	16
1.3 Validity of Screening Instruments for Problem Gambling in Adolescents.....	16
2. Prevalence	18
2.1 Young People’s Tracking Survey	18
2.2 Comparison Between British Adults & Children (BGPS).....	22
2.3 Comparison of British Gambling Prevalence with International Prevalence Studies:.....	22
Gambling Prevalence in Young Australians.....	22
Gambling Among Canadian Students.....	23
Gambling Behaviour of Adolescent Gamblers in Ontario.....	24
Monitoring Adolescent Gambling in Minnesota.....	24
Gambling & Problematic Gambling among Norwegian Youth	25
Prevalence of Lottery and Scratchcard Use Amongst Adolescents in the East Midlands.....	25
3. Characteristics & Motivations of Problem Gambling Behaviour	26
3.1 The Effects of Modelling and Experience on Young Children’s Persistence at a Gambling Game.....	27

3.2	Acquisition, Development and Maintenance of Fruit Machine Gambling in Adolescence	28
3.3	Demographics	28
3.4	Addiction	29
4.	Environment	31
4.1	Familial Influences	32
4.2	Audio Visual Stimulation.....	33
5.	Offending Behaviour.....	34
6.	Small Scale Related Studies	35
6.1	Brief Communications: Scratchcard Gambling Among Adolescent Males	36
6.2	Adolescent Participation in the UK National Lottery Games	36
6.3	The Acquisition, Development & Maintenance of Lottery and Scratchcard Gambling in Adolescence.....	37
6.4	Adolescent Accounts of the UK National Lottery and Scratchcards: An Analysis Using Q-Sorts.....	37
6.5	Adolescent Perceptions of the National Lottery and Scratchcards: A Qualitative Study Using Group Interviews	38
6.6	Underage Internet Gambling	38
6.7	Children’s Cognitive Perceptions of 6/49 Lottery Tickets	39
FINDINGS	.....	40
CONCLUSIONS	.....	42
RESEARCH RECOMMENDATIONS	.....	44
GLOSSARY OF TERMS	.....	47
BIBLIOGRAPHY	.....	51
Books	.....	51
Journals	.....	51
Other Sources	.....	55
Internet	.....	56
TABLE OF STUDIES	.....	58-64

LIST OF TABLES AND FIGURES

Table One: Prevalence of problem gambling in young people (Ashworth et al, 2000)

Figure 1: DSM-IV-J Criteria developed by Fisher (1992)

Figure 2: Trend in past week participation in different gambling forms (Ashworth et al., 2000)

EXECUTIVE SUMMARY

Prevalence of problem gambling

- There is a lack of substantial data on the prevalence of gambling and problem gambling among under 18 year olds in the UK. It is not possible to give reliable prevalence figures for problem gambling in childhood.
- Prevalence studies applicable to young people across the world are difficult to compare because of varying age groups, definitions of gambling and problem gambling, and research design.
- The studies with the most rigorous design, using large national random samples and recent coverage find the lowest rates.
- There is no evidence of pools competitions causing problematic behaviours.

Patterns of problem gambling

- Some believe that the younger the onset of play the more serious gambling problems are likely to become. The current evidence is insufficient to make definitive judgements about this hypothesis. To decide the matter a longitudinal study of gambling is required.
- Prevalence research suggests that adolescent males are significantly more at risk of gambling and problem gambling as measured by standard problem screening instruments than adolescent females.
- There are potential factors, which may predispose a child or young person to become a problem gambler - heavy parental gambling, delinquency, regular illicit drug use, and average-to-below school grades - but no direct causal relationship has been reliably established.
- There is evidence to suggest that several potentially problematic or illicit behaviours which cluster (such as illicit drugs, early drinking and offending) are not atypical during adolescence and may be associated with problem gambling but do not necessarily cause it.
- There is no strong evidence to support the suggestion that the National Lottery is a 'gateway' to other 'hard' forms of gambling.
- Older children appear to believe that a greater level of skill is needed to select tickets than younger children. Children report believing they will win large amounts of money.
- There is an increase in the percentage of underage draw and scratch card buyers who are not being refused their purchase by shopkeepers.
- Levels of gambling and problem gambling appear to decrease with age.

Young people and gambling

- Only one study (Ashworth et al, 2000) of gambling behaviour can be generalised to the current population of young people. It found that the majority of young people gamble (70%).
- There is no evidence to suggest that the majority of under 16 year olds who (illegally) participate in the National Lottery, or legally play machines, are adversely affected. The majority of adolescents recognise the potential dangers of addiction, overspending and debt (Ashworth et al 2000).

- There is evidence to suggest that lottery and scratch card use changes over time. Ashworth *et al* (2000) found that these forms of gambling appear to be declining with this age group since they were first introduced.
- Most children can access online gambling sites. The National Lottery, Ladbrokes and some other sites have effective means of blocking access to under-age gamblers. However, the majority of sites do not have effective screening and blocking technology.

INTRODUCTION

Legislation on gambling in Britain is currently under review with the Gambling Bill published in October 2004, allowing a reconsideration of the current regulations governing gambling by children and young people under 18. The nature of gambling behaviour in children and young people under 18 is of particular concern to both government agencies and public bodies, although the link between children and young people, gambling and problem gambling behaviour is unclear. There are a small number of key researchers across the world investigating problem gambling behaviour in childhood and there is a growing evidence base designed to help identify the risk and protective factors associated with problem gambling amongst children and young people. Nevertheless, the data on children, young people and gaming machines is extremely limited.

Public opinion on gambling and young people is divided. A report commissioned by the Gambling Review Body: Attitudes to Gambling in Great Britain – Gambling Review Report (2001) found that 42% of respondents interviewed disapproved of children playing on fruit machines with a prize limit of £5, but of the respondents in the 16-20 year age range, 49% approved as long as they were accompanied by an adult.¹ This was the highest percentage of all the age groups (www.culture.gov.uk).

This report critically reviews the state of current research knowledge and systematically reviews the literature on children and young people under 18 and gambling. Although incorporating data and discussion of children and gambling behaviours worldwide, this report concentrates on drawing conclusions relevant to the British situation, assessing the quality of research focussing upon gambling behaviour and any later effects.

Gambling is a widely accepted social practice within British society. The current generation of children and young people grow up in an environment where gambling is not only routine, but also accessible and promoted by the government (for example, the National Lottery). Fundraising and social events in schools and religious institutions often involve some form of gambling such as bingo or 'casino nights' (Derevensky and Gupta, 2004). The effects of such an accepting social environment and any consequential risks should be of interest not only to academic researchers, but also to parents, social workers, criminal justice professionals and others who are concerned about children and their welfare (McPhee and Canham, 2002). All forms of media including television, radio, magazines, the internet and newspapers expose children and young people to gambling (Lavoie and Ladouceur, 2004). Kezwer (1995:84-88 cited in Poulin, 2000:54) stated that the gambling environment in the mid-1990s was one within which gambling was seen to be "a wholesome activity that benefits charities, if not society as a whole". This remains the case and through personal interaction and socialisation most children and young people come into contact with some form of gambling behaviour.

Despite the primary focus on the UK, studies reviewed in this report also give evidence of young people gambling in North America, Australia, Canada, New Zealand, Sweden and elsewhere in the world. In the context of international gambling law, Britain is distinct in allowing legal gaming machine gambling to children and young people (Fisher, 1995).² Gaming machines are situated in places where children, young people and adults alike spend their leisure time and money. Young people are able to play on fruit machines in amusement arcades, fast food outlets, public houses, cafés and restaurants (Fisher,

¹ This includes 16 year olds.

² See glossary.

1992:264). The assumption is that gambling by young people under the age of 18 is a typically British activity; however much evidence suggests that gambling by young people occurs internationally. In Las Vegas, for instance, Casino Hotels cater for all ages with most having at least a small area dedicated to arcade games. Children receive paper tokens similar to raffle tickets which can be exchanged for toys. These games are legal as they are designed to be apparently skill based, although they are in effect games of chance (www.nevadaindex.com/7arcades.htm). Slot machines are extremely popular among teenagers in Japan, far more than the traditional Pachinko. Japanese laws state that one has to be aged 18 to play Pachinko (a combination of pinball and slot machine) or slot machines, but this is rarely enforced. In theory Pachinko is played for prizes, however, the reality is that most players prefer money, so a deal takes place away from the gambling hall that involves a 5-part-transaction – from cash to balls to receipt to special prize then back to cash - to facilitate the collection of monetary winnings. Pachinko parlours also house slot machines, with an estimated thirty million people playing pachinko and pachislo (fruit machine) every year in Japan (www.japansociety.com).

In Britain, arcades often provide an important indoor leisure environment for young people in their teens who perhaps feel too old to attend youth clubs but are too young to be able to purchase and consume alcoholic beverages in licensed leisure venues such as public houses, dance clubs and bars (Fisher, 1992:264). An arcade is warm and dry, it is a place to meet friends and hang out, potentially offering excitement away from parental supervision. Furthermore, gaming machines are fast, aurally and visually stimulating, require a low stake, provide frequent wins and so are seen to be rewarding, and they require little or no pre-gaming knowledge. Not every young gaming machine player will develop into a problem gambler and questions arise as to the individual, structural and environmental factors, the gambling medium and the individual's interaction with that medium that may all contribute in some way to excessive play.

Adolescence can be characterised as a period of risk taking and experimentation, either with a greater willingness to take risks or a feeling that the transition to adulthood necessitates the negotiation of risk (Parker, Aldridge and Measham, 1998). Many of the behaviours that as a society we hold to be problematic or compulsive are first experienced by young people growing up: excessive alcohol consumption, illicit drug use, smoking, dangerous driving and unsafe sexual practices are a few examples (Moore and Rosenthal, 1993, cited in Moore and Ohtsuka, 1997:208). Indeed there is a growing body of research which suggests that early involvement in a range risk taking behaviours is correlated (Plant and Plant, 1992; Parker et al, 1998). This risky behaviour for some young people may also include gambling. All of these behaviours have a potential for resulting in individual and social costs, although far more is known and disseminated about some of these risk taking behaviours than others. For example, warnings about potentially problematic alcohol consumption, illicit drug use and unprotected sex form a part of the personal and social education programme in British schools, yet there is little or no information within the standard PSE curriculum about gambling or the possibly damaging effects of excessive gambling behaviour.

The desire to experiment and take risks in many areas of adult life is reflected in children and young people's behaviour, so we should not be surprised that they gamble. Adolescents often play games involving money: for example, pool, cards, lotteries, bingo, dice, sports betting, and gaming machines or other gambling. And indeed this builds on earlier childhood games and board games which may include an element of gambling or chance such as monopoly, backgammon and so forth. This experimentation does not always lead to the onset of problem behaviours. According to Moore and Ohtsuka (1997:234) gambling is a "frequent, normative, and approved activity among the young".

But the question remains: why do so many children and young people select gaming machines as their chosen form of gambling? And why are some players able to manage their gambling as a leisure time pursuit that is not and will never be problematic, whilst others are persistent to the point of detriment? It is known that adults gamble for a range of diverse and often complex reasons. Gambling incorporates risk taking and sensation seeking; it can be exciting, frustrating or cathartic (Cotte, 1997:403). One question which arises in relation to gambling and other potentially problematic behaviour such as illicit drug use is whether gamblers can be put into two distinct groups according to their gambling behaviour, such as recreational gamblers and problem gamblers. Alternatively, is there a scale or continuum of gambling behaviour which ranges from occasional, recreational and holiday gambling to daily, obsessive or problematic gambling? Or might gaming behaviours be dynamic: sometimes problematic and at other times not?³

In 1999 there were 250,000 slot machines or 'fruit machines' in Britain and despite advanced technology, they still operate along the same basic principles as their nineteenth-century predecessors. Play is activated by inserting money (or equivalent) and a prize is won if the specific combination of images is produced. The 'slot' is a 'self-contained gambling unit' which according to Reith (1999:108) is partly appealing because of its simplicity.

Gaming machines is a catch-all term that covers a variety of amusement equipment. For instance, these machines are called slots in the USA, poker machines in Australia and one-armed bandits or fruit machines in the UK (Dickerson, 1996:154). For the purposes of this report, the term related to the research being reviewed will be used. At all other times the term gaming machines relates to all types of slots, fruit machines, poker machines and video gaming machines.

The development of gaming machines cannot be ignored when investigating the effect of gambling on children. It is an important factor in relation to these machines' prevalence and attraction. Modern machines are advanced in comparison to the original design but in crucial ways the game remains the same. For example, it still takes approximately three seconds for the reels to spin (Dickerson, 1996:154).

Fabian *et al* (1995:253) believe that slot machines are full of addictive potential due to their careful construction as games and machines. The game itself involves a rapid gambling sequence, short pay out intervals, a large variety of stakes and winnings, an attractive probability of winning and an active involvement from the player by pressing all the buttons; factors that tie into the operant conditioning theory. Yet, there is evidence that it is not the machines themselves that are the cause of problematic gambling (see Prus, 2004). These causes are claimed to be found in the psychological and social conditions of a player *and* their play. Furthermore, specific combinations of these factors can be theoretically pathological yet not all gamblers, including children and young people, experience negative effects.

So why do people gamble? For some it is claimed to be the prospect of quick and easy money, the sensation of winning, the buzz or excitement of the game, for entertainment value, and for 'time out' or escapism from stress and problems. Research suggests that the body becomes excited (measured for example in increased heart rate) when engaged in playing gaming machines. There is evidence, however, of differential levels of arousal

³ This mirrors the established debate in the drug and alcohol field in relation to definitions of recreational and problematic use (eg. Measham, Aldridge and Parker, 2001).

when playing related to factors such as gender, winning or losing, (e.g. Coventry and Hudson, 2001) and even different types of passion (eg. Ratelle *et al.*, 2004). However, for some it is claimed these allures fade away and their level of stimulation remains constant as their playing develops into problematic or obsessive gambling. Derevensky and Gupta (2004) state that adolescent pathological gamblers continue to chase losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Research by Blaszczynski, Wilson and McConaghy (1986) found that those identified as pathological gamblers did not have elevated sensation-seeking scores, they were not trying to raise their arousal level but instead maintain it at average levels (cited in Moore and Ohtsuka, 1997:212).

Some people gamble when on holiday, some gamble regularly and become accomplished gamblers. But why do certain people pursue gambling on a more extensive and sustained basis and potentially end up with their lives revolving around their gambling ventures? The evidence base cannot currently supply a comprehensive explanation as to why certain individuals continue to gamble in an excessive manner in spite of negative consequences. Those adults, children and young people who gamble at a problematic level spend too much time and money trying to win back losses and beat the machines, but little is known about the factors which may make an individual more vulnerable to displaying this problem gambling behaviour (Derevensky and Gupta, 2004).

'Chasing' is central to persistent gaming machine playing, illustrated in player rationalisations such as the 'machine owes me', or 'it must be my turn for a win today'. Dickerson (1996:162) argues that persistent play is not associated with one type of personality and also that some machines are more attractive than others. He states that governmental regulation of slots creates a situation whereby the individual's choice not to gamble is eroded. However this line of argument is rather determinist in that it assumes an individual has little or no control over his or her actions (Dickerson, 1996:163), a point raised in critiques of the classical disease model of addiction (Booth Davies, 1992).

Unlike previous generations, the current generation of children and young people are growing up in the UK in an environment where gambling - in the form of the National Lottery - is not only routine but also visible on public broadcast national television. The first ever National Lottery Draw took place on Saturday 19th November 1994 and is now in its tenth year. The popularity and success of the British National Lottery is clearly evident. In the 12 months up to the end of March 2004 Camelot raised an average of £23.4 million per week for good causes bringing the total raised to date to £15.6 billion, alongside creating the 1,600th National Lottery millionaire. The National Lottery has funded over 171,000 projects and grants to individuals across the UK, ranging from Olympic athletes and charities, through to schools and underprivileged groups (www.national-lottery.co.uk). A survey of National Lottery winners carried out by MORI (1999) discovered that of a sample of 249 players who had won at least £50,000 (this included 111 winners of more than £1 million) 55% were happier now than before their win, with two thirds (65%) claiming that financial security and fewer worries made life easier (www.mori.com).

Data published by Camelot Group plc show total sales for the financial year to 31 March 2004 grew to £4,614.6 million, an increase of over £40 million on last year's figure of £4,574.5 million and the first year on year growth for six years. Weekly sales are now running at over £88 million a week, which is more than £40 million more than when the National Lottery launched with just one game in 1994. This is more than likely due to the growth of diversity within the company, with the proliferation of new lottery games, increased frequency of jackpots and rollovers, and daily play.

Despite being the third biggest lottery in the world, the UK National Lottery is ranked only 47th in the world in terms of per capita spend (La Fleur's 2003 World Lottery Almanack, quoted in www.nationallottery.co.uk). In other words in Britain large numbers of people play the lottery but spend relatively small amounts. It appears that some reassurance can be drawn from British lottery behaviour, therefore, a perspective put forward by Dianne Thomson (CEO Camelot, plc) at the recent GamCare annual conference when she noted that it is more responsible to have a greater number of players playing with relatively low stakes than less players playing with bigger stakes. Having draws on more days of the week could have an impact on those players who play the same numbers weekly, however, due to the 'what if' phenomenon (Thomson, D., 'Prevention in Preference to Cure', GamCare annual conference, July 2004). Research by Wolfson & Briggs (2002) supports this argument with results from their study showing that some lottery players feel an obligation to continuously play with their regular 'special numbers' on whatever lotteries are held through a superstitious fear of their numbers coming up without them having bet on them resulting in them missing out on a win (Wolfson & Briggs, 2002:11).

The NOP Survey (Creigh-Tyte & Lepper, 2004) has shown that most people in contemporary Britain have a favourable attitude to lotteries, with 53% stating that they had favourable to very favourable attitudes and 20% stating that they had an unfavourable to very unfavourable attitude towards lotteries. This is in direct contrast to internet gambling which shows only 7% of those interviewed had a favourable/very favourable attitude to this form of gambling and a 63% unfavourable/very unfavourable attitude (Creigh-Tyte and Lepper, 2004:5). Therefore the backdrop to the current review is the popular appeal and sheer numbers of people – both over and under 16 - who derive pleasure from participating in gambling and from viewing gambling-related entertainments. Gambling is, therefore, an acceptable social behaviour which the majority of adults are involved in.

The Government acknowledges that children and young people are vulnerable to the risk of becoming problem gamblers. With the Government's proposed plans to modernise Britain's gambling laws with the 2004 Gambling Bill a core area of concern will be the necessity of providing effective safeguards to protect children and vulnerable people from potential exploitation with new forms of gambling technologies or unfair practices (Gambling Review Report, 2001:77-84). Currently there are no plans to reduce the age of gambling by young people buying lottery tickets; this will remain at 16 years under the proposed Gambling Bill.

PROBLEM GAMBLING

The widely accepted definition of problem gambling is understood as "gambling to a degree that compromises disrupts or damages family, personal or recreational pursuits" (Lesieur & Rosenthal, 1991 cited in the Gambling Review, 2001:85-96). Although the British National Lottery Draw is the most popular form of gambling, it is important to note that the evidence to date suggests that it has the lowest prevalence of problem gambling. For example, research by Sproston *et al* (2000) indicates that the National Lottery Draw has the lowest prevalence of problem gambling amongst past year gamblers (1.2%), with the next lowest being scratch cards (1.7%). The prevalence of problem gambling among people who have *uniquely* played the National Lottery and played *no other* gambling activities in the past year is 0.1% according to both SOGS and DSM-IV (Sproston *et. al*, 2000:60). Furthermore, in 2002/2003 only 4% of people calling GamCare's helpline quoted problems with lottery draws and 0.2% with scratch cards (www.gamcare.org.uk).

By contrast Griffiths (2000) argues that instant win products such as scratch cards are potentially addictive and should be considered as a 'hard' form of gambling. He suggests that the mixture of conditioning effects, rapid event frequency, short payout intervals and psychological rewards, and the fact that no skills are needed render them potentially addictive. Griffiths argues that scratch cards are "paper fruit machines" (1995b, 1995c). Like fruit machines, Griffiths argues that their significance lies in their short payout interval and rapid event frequency. Furthermore, Griffiths believes that certain factors exploit certain psychological principles of learning. Using the 'operant conditioning' process as his example he argues that scratch cards reinforce people's desire to gamble through the reward of money. The other related aspect of the operant conditioning theory is the 'psychology of the near miss' which acts as an intermediate reinforcer.

Since conducting a National Lottery Tracking Study (see below) Camelot have introduced a range of measures targeted at young people. These include; 'Operation Child', which involves test purchasing visits carried out by young people who are aged 16, but look younger; retailer training, including 'Retailer Vigilance Campaigns'; raising awareness through the provision of education resources for schools and retailers and working with parenting organisations, and promoting 'proof of age card' schemes.

OBJECTIVES

The objectives of this technical report are:

- To assess the standards and rigour of the research literature relating to prevalence and participation by children and young people under 18 in the National Lottery and other lotteries, scratch cards, football pools competitions and the use of gaming machines;
- To distinguish between the proportion of children and young people under 18 years of age affected by playing gaming machines, lotteries, scratch cards and football pools competitions;
- To evaluate any evidence which suggests that participation in the lottery, scratch cards, football pools competitions and use of gaming machines by children and young people under 18 years of age leads to adverse effects such as problematic or pathological gambling behaviour;
- To assess the severity and persistence of any impacts as measured by standard problem screening instruments;

METHODOLOGY

A variety of search methods (both computerised and manual) ensured as thorough a search as possible. The initial search for relevant material was carried out using the following data sources:

- Electronic bibliographic databases
 - HMIC (all 3 databases) medline
 - IBSS CINAHL
 - SIGLE Dissertation Abstracts
 - Social Work Abstracts Social SciSearch
 - NASW Clinical Register Wilson Social Science Abstracts
 - ASSIA Social Services Abstracts
 - ERIC Campbell SPECTR
 - psyInfo ZETOC
 - CareData DARE
 - NHSEED C2 RIPE
- Reference lists from relevant primary and review articles
- Books
- Official Government documentation
- E-Journals and hard copy journals
- Known researchers specific to gambling by children and young people
- The Internet
- Specific gambling related organisations such as GamCare, Gamblers' Anonymous, The Gordon House Association, and The UK Forum on Young People and Gambling

REVIEW

1. Screening Instruments

Standard screening instruments including SOGS, DSM-IV, CPGI, VGI and MAGS have been validated with adults in an attempt to identify problematic behaviours such as gambling. Questions have been raised, however, about the internal and external validity of research that uses such scales with young people; in relation to SOGS, for example, it has been suggested that it might over-represent end stage problems (Wiebe, Cox & Mehmel, 2000:227). Walker & Dickerson (1996) are also critical of the accuracy of SOGS and believe that prevalence studies should measure the current rate of gambling (incidence) rather than 'lifetime' experience.⁴ The Canadian Problem Gambling Index (CPGI) (Ferris and Harold, 2001) is a new instrument for the measurement of problem gambling in general population surveys. Compared to SOGS and DSM-IV, the CPGI includes more indicators of the social and environmental context of problem gambling. Currently, there is a lack of consensus in findings between studies conducted in different spatial and/or temporal contexts. Comparative results are problematic due to the bias that different screening instruments introduce and lack of agreement on cut-off criteria, such as age of sample, nomenclature, the social setting, and adolescents' accessibility to both legal and illegal gambling venues (Derevensky & Gupta, 2000:229).

Although screening instruments are regularly being developed and altered to suit the populations they are administered to, there is a clear need for standardised definitions of problematic and pathological gambling behaviour, and related standardised measurements using screening instruments, which are acceptable to researchers and clinicians worldwide (Fisher, 2000). The advantage of these 'gold standard' definitions and measurements are that they facilitate direct comparison of prevalence rates between countries, and of problem gambling behaviour between populations. In gambling research, variations in research design, definitions and measurements mean that confidence in generalising from the findings of many studies should be low. The drawback of 'gold standard' definitions, measurements and screening instruments, however, is the possibility or even desirability of an historically and culturally universal tool. There may be lessons to be learned from other research on and with young people, for example in the drug and alcohol field, where considerable effort has been put into developing research instruments, protocols and methodologies to maximise the validity and reliability of data elicited on sensitive subjects using culturally sensitive research design rather than the development of universal 'gold standard' instruments (e.g. Parker *et al.*, 1998; Aldridge *et al.*, 1999).

In 1987 the standard DSM-III was replaced by the DSM-III-R. These criteria are modelled upon those for psychoactive substance dependence and therefore are based on the assumption that problem gambling is an addiction similar to other addictions. The DSM criteria were created by the American Psychiatric Association and are drawn from classical medical models of addiction which focus on pharmacological and psychological dependence caused by the properties of psychoactive drugs. Although research based on the medical model of addiction and using the DSM criteria is not uncommon we must consider that other perspectives may also be valid particularly in relation to behaviour and context. The prevalence of the traditional model of addiction may limit understanding of

⁴ A related, lively debate exists in the drug and alcohol field in relation to measuring illicit drug use by focussing on lifetime prevalence of drug use or prevalence of recent/regular drug use. See Shiner and Newburn (1997), Parker *et al* (1998) and Parker *et al* (2002). It is suggested here that both are important, necessary and complementary measures.

problem gambling behaviour and may potentially disempower the individual from believing they are able to control their behaviours (eg. Peele, 1985; Gossop, 2000).

In 1991 a new set of nine criteria emerged and were called DSM-IV. The DSM-IV criteria have been adapted for use with young people who gamble and named the DSM-IV-J criteria. These new criteria were validated using a questionnaire survey on a sample of 467 school children aged 11 to 16 years old. Fisher found that those young people who were "defined as 'probable pathological' gamblers by the DSM-IV-J index were significantly more likely to be involved in behaviours hitherto associated with dependency" (Fisher, 1992:263). The scale contains 9 criteria and respondents who score four or more are classified as problem gamblers.

Figure 1: DSM-IV-J Criteria developed by Fisher (1992)

- 1 Preoccupied with gambling
- 2 Needs to gamble with increasing amounts of money in order to achieve the desired excitement
- 3 Restlessness or irritability when attempting to cut down gambling
- 4 Gambles as a way of escaping from problems or relieving dysphoric mood
- 5 After losing money gambling, often returns another day in order to get even
- 6 Lies to family members or others to conceal the extend of involvement with gambling
- 7 Often spends much more money on gambling than intended
- 8 Committed antisocial or illegal acts, such as spending school fare/dinner money/stealing from family/outside in order to finance gambling
- 9 Has fallen out with family, or disrupted schooling because of gambling (truancy)

Source: Ashworth *et. al.*, 2000

1.1 Problem gambling among adolescent students in the Atlantic provinces of Canada: SOGS

13,549 students from 719 grades 7 (age 12-13), 9 (age 14-15), 10 (age 15-16) and 12 (age 17-18) classes in the four provinces completed a self report anonymous questionnaire that incorporated the SOGS revised for adolescents (Poulin, 2000:53,57). SOGS contains 20 questions some of which are similar to DSM-IV-J (e.g. Did you ever gamble more than you intended to?) although none of the wording matches exactly. Unlike DSM-IV-J it directly asks the respondent whether they feel they have ever had a problem with gambling. It also includes more detailed questions about sources of finance to pay gambling debts, such as borrowing, selling family property and so forth. The researchers also requested information about demographics, social environment, alcohol and illicit drug use, help seeking, school policy, and gambling activities and problems related to gambling (Poulin, 2000:57).

Drug use estimates were consistent to those found by similar surveys, there was low non-response for the drug use item and there were high rates of logical consistency between selected items. Thus the SOGS scale was found to have acceptable internal consistency and reliability (Poulin, 2000:59).

The prevalence of 'at risk' and problem gambling among adolescent students in this research was estimated to be 8.2% and 6.4% respectively using a broad definition, and 3.8% and 2.2% respectively using a narrow definition. Problem gambling for males was three times more prevalent than for females (Poulin, 2000:70). However Poulin used a cut-off point of three criteria to classify problem gamblers. This is in marked contrast to

other studies that use higher cut-off points and SOGS is critiqued for giving higher prevalence rates of problem gambling than other standard screening instruments. The researchers also included daily gambling within the broad definition of problem gambling, which does not correspond to other screening instruments. The lack of data gathered from students who were absent when the survey was implemented or from those not in the school system also limits these findings. Poulin's research was well designed and administered to a large sample size but the higher prevalence rates must be reviewed in the context of a low cut off point.

1.2 Pathological Gambling Among Adolescents In America: Mags

MAGS is a brief clinical screening instrument that can provide an index of pathological and non-pathological gambling by short survey or interview and can also document the psychometric translation of the proposed DSM-IV pathological gambling criteria into a set of survey or clinical interview questions. It was devised in 1994 when it was observed that increasing numbers of young people in the United States of America were gambling. This was assumed to be due to increased access, the development of casinos and lotteries and the social endorsement of gambling behaviours (Shaffer *et al.*, 1994:340).

A validation study by Shaffer *et al.* (1994) was conducted with 856 adolescents between the ages of 13 and 20 from suburban Boston high schools. The researchers claim that their data correctly classified 96% of pathological, non-pathological or in transition adolescent gamblers. The study sampled respondents from middle and upper middle class families and there were no significant demographic differences among the three high schools participating in the research. MAGS classified 8.5% of the students as problem gamblers whereas the DSM-IV only classified 6.4%. The researchers concluded that MAGS was useful in conjunction with other screening processes and instruments, and may be used most effectively as one step in the identification of problem gamblers (Shaffer *et al.*, 1994:356).

Shaffer *et al.*'s survey revealed that 32.5% of those who had gambled in their lifetime had placed their first bet before the age of 11 (Shaffer *et al.*, 1994:350). Those who were classified as pathological gamblers by the DSM-IV criteria had placed their first bets at a significantly younger age than their non-pathological counterparts (Shaffer *et al.*, 1994:350). This is a useful study although it incorporated a targeted and thus biased sample. This study is not sufficient to prove a causal relationship between early onset of gambling and later problem gambling behaviours and indicates the need for further, longitudinal, research.

1.3 Validity Of Screening Instruments For Problem Gambling In Adolescents

What is of paramount importance when studying research surrounding the issues of problematic gambling among adolescents is that recent research has shown that prevalence rates may be inflated owing to a failure to understand the questions of the SOGS-RA and DSM-IV-J. Pelletier *et al* (2004) devised a test to explore the accuracy of DSM-IV-MR-J with regards to assessing pathological gambling amongst adolescents. The DSM-IV-MR-J was administered in a school classroom; participants in the study were assigned to either an experimental or a control group. Participants taking part in the first study group were asked to explain what each question in the DSM-IV-MR-J meant during individual interviews. If it was found that the participant did not understand the question the investigator corrected them. The questionnaire was then administered a second time. The second group was only submitted to a test/re-test procedure. Pelletier *et al* found that 22% of the questions had been misunderstood by the participants. Significant changes in

diagnostic categories were uncovered on the second administration for both groups. It was found that a 20% and 29.4% decrease occurred for problem/pathological gamblers in both groups. Other studies reveal that some researchers have incorrectly used the criteria set out by Fisher (1992). Fisher proposed 9 criteria (DSM-IV-J) for diagnosing pathological gambling among adolescents, and formulated 12 questions (test questions) to identify the presence of such criteria. It has come to light that a number of researchers have mistakenly used the 12 test questions as opposed to the 9 criteria which is likely to have led to an overestimation of the prevalence of problem gambling in young people. Such findings have led a number of researchers (Derevensky *et al.*, 2003; Ladouceur, 2003; DeFuentes-Merillas, 2003) to further endorse the need for a "gold standard" refined version of the current adolescent instruments and screening tools along with a common consensus with regards criteria for adolescent problem gambling, and clarity of nomenclature issues.

Derevensky & Gupta (2000) compare three screening measures used to examine the gambling behaviour of 980 adolescents; the SOGS-RA, DSM-IV-J, and the GA 20 Questions. Variation in the numbers of adolescents identified as having problem/pathological gambling behaviour was found according to the scale. The DSM-IV-J was found to be the most conservative measure identifying 3.4% of the population as problem/pathological gamblers, while the SOGS-RA identified 5.3% and the GA 20 Questions identified 6% of youth as experiencing serious gambling problems.

Certain factors may influence responses to screening instruments and other forms of data collection. Parke and Griffiths (2002) provide possible explanations for the difficulties in examining the psychology of slot machine gamblers in the UK and factors which can impede the collection of reliable and valid data. These include engrossment (fear of legal consequences), dishonesty, social desirability, motivational distortion, fear of ignorance, guilt, embarrassment, infringement of player anonymity, unconscious motivation, lack of self-understanding, chasing, and lack of incentive to participate in research. In addition to play-specific facts, there are also some researcher-specific factors such as the age, gender, ethnicity and general appearance of researchers, their ability to 'blend in' with research subjects (where relevant to the research design), and issues of anonymity and confidentiality when conducting research.

Sampling of both people and settings can be subjective, particularly when researching hard-to-reach populations. Lack of 'street knowledge' about slot machine gamblers and their environments can therefore lead to 'subjective interpretation issues' (Parke & Griffiths, 2002:4). There are also external factors which need to be considered when carrying out research; for example, non-participant observation is difficult in a smaller establishments and/or places where clientele numbers are low, such as some amusement arcades. Gatekeeper issues and bureaucratic obstacles such as gaining permission, management concerns of disturbing gamblers, and industry perceptions which may view researchers as predominantly anti-gambling and anticipate that research will report negatively (Parke & Griffiths 2002:5). In the drug and alcohol field research has been successfully conducted in situ with teenage and young adult drinkers and drug users using ethnographic, and culturally and ethically appropriate observation methods (eg. Moore, 1993; Brain and Parker, 1996; Measham *et al.*, 2001).

2. Prevalence

2.1 Young People's Tracking Survey

Research by Ashworth, Doyle and Howat (2000) was commissioned by the National Lottery Commission as part of an ongoing tracking survey to monitor young people's gambling behaviour and attitudes towards gambling with three waves completed so far: 1997, 1999 and 2000. The objectives of this tracking survey were to monitor trends in the level of participation in National Lottery games and underage sales of National Lottery products by 12-15 year olds. The survey was also designed to identify the prevalence of 'problem gambling' by under-16s on the National Lottery and scratch cards. The sample consisted of 11,581 12-15 year olds drawn from a representative sample of 131 schools in England and Wales. Data collection was supervised and employed anonymous self-completion questionnaires.

The problem gambling screen adopted was a version of the DSM-IV, commonly considered to be the most conservative gambling screening tool in popular usage. The DSM-IV-MR-J, developed by Fisher (1992), has nine items and requires a positive response to at least four to result in a classification of problem gambling (see above for further discussion of screening tools).

The key findings of this survey were that since 1999 there has been a decrease in 12-15 year olds spending their own money on the National Lottery. In 2000, 9.0% had played scratch cards (compared with 11.6% in 1999), 7.6% had played in the National Lottery draw (compared with 10.7% in 1999) and 2.7% 'Thunderball' (compared with 4.4% in 1999). Thus there has been a drop in under age participation in all three games (2000:2). Ashworth, Doyle and Howat (2000:47) found that past week play on National Lottery scratch cards for 12-15 year olds had increased from 7.9% in 1997 to 11.6% in 1999. However, despite this increase in use the prevalence of problem gambling associated with Instants had decreased. Their research found "substantial overlap in problem gambling behaviour on the two [Instants and fruit machines] games" (Ashworth, Doyle and Howat, 2000:47).

The survey found that 1.7% were classified as problem gamblers on Instants in 1999 in contrast to 2.3% in 1997. This research shows not only a reduction in problem gambling by young people, but a reduction in the playing of lotteries.⁵ Watching the lottery on television has also declined significantly since 1999 (28% in 2000 compared with 38% in 1999). This finding is significant in relation to problem gambling because this study also found that there is a significant association between viewing by under 16s and increased playing. The attitudes of young people in 2000 were similar to those in 1999, however the young people in the 2000 survey believed their parents were less condoning of underage gambling than they were a year earlier (Ashworth, Doyle and Howat, 2000). It was also found that problem gamblers were more likely to exhibit anti social behaviour and that this has not changed in any significant way since the previous survey (2000:4).

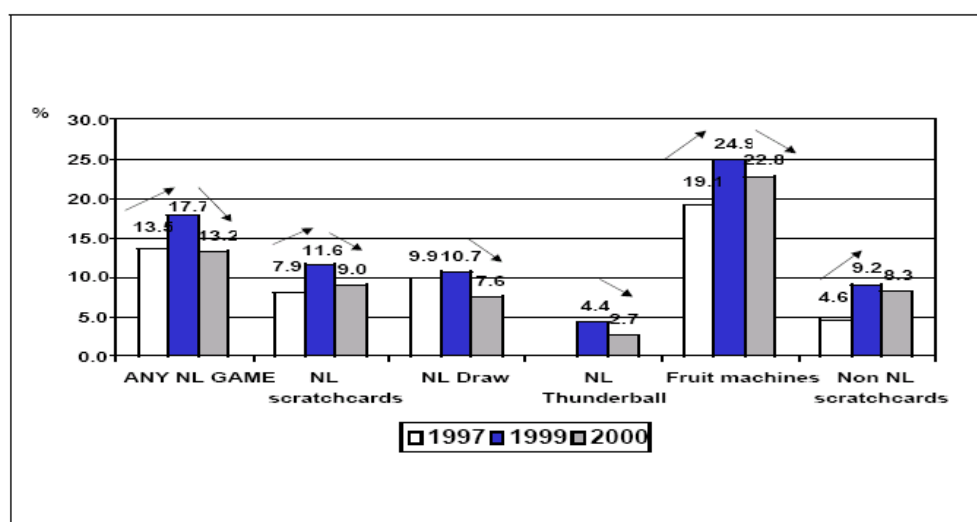
⁵ It appears that lottery use may now have peaked in terms of overall numbers involved, if not expenditure. (The most recent annual figures suggesting increased lottery expenditure buck the trend of a six year fall.) There may be several reasons for this, although no large scale study to date has explored this issue in detail. Possible reasons to explore further include an overall reduction in gambling perhaps due to the 1990s novelty factor now declining for this generation of players, with many people now having had the experience of losing which research suggests in relation to small children and sweets (Tremblay *et al* 1998) is a disincentive to gamble. The reduction in lottery, scratchcard and pools playing in particular, however, could be due to a transfer from these established forms of gambling to the more recently established, hence newer and more exciting technological innovations in relation to online gambling and the internet.

Ashworth *et. al.* (2000) found gender differences in adolescent lottery play to be significant (at the 1% level). Boys are twice as likely to play than girls on both the draw and instants. No reason is given for these gender differences or for the change from girl's to women's participation in relation to males.

The research reinforces Creigh-Tyte and Lepper's (2004) study on an adult population which shows that gambling on lotteries and scratch cards overall is in decline. This study is not only extremely important with regards to tracking changes in young people's gambling behaviour and attitudes but also with regards to any consequences of playing the National Lottery Draw (and related games such as scratch cards) such as the possible 'gateway' to other more serious or 'hard' forms of gambling.⁶

Other forms of gambling were also enquired into and similar patterns found. Lifetime prevalence of use of 'fruit machines' reduced from 75% in 1997 to 65% in 2000, although trends in past week gambling were more variable (see Figure 2). Rates of problem gambling on fruit machines showed no significant decrease (3.5% in 1997 and 3.2% in 2000) and there was no significant change overall with scratch card and fruit machine problem gambling combined (see Table 1).

Figure 2: Trend in past week participation in different gambling forms (Ashworth *et al.*, 2000)



⁶ 'Gateway' theory, and relatedly stepping stone theory, is most usually associated with the field of drug and alcohol studies, in particular young people's experimentation with supposedly 'soft' drugs such as cannabis and the possible existence of a relationship with later use of 'hard' drugs such as heroin.

Table 1: Prevalence of problem gambling on National Lottery scratch cards and fruit machines (Ashworth et. al., 2000)

	1997	1999	2000	Significance 1999-2000
Base: All respondents	(9774) %	(9529) %	(11581) %	
Problem gambling on fruit machines <u>only</u>	3.5	3.7	3.2	-
Problem gambling on NL scratchcards (Instants) <u>only</u>	1.0	0.5	0.5	-
Problem gambling on NL scratchcards (Instants) <u>And</u> fruit machines	1.2	1.2	1.2	-
<i>Any problem gambling on either or both of these two games</i>	5.6	5.4	4.9	-

The study is limited to England and Wales and therefore is not representative of the population of young people in the UK as a whole. It also has relatively small base sizes for both problem gamblers and minority groups and omits any measure of socio-economic group. The study raises issues that could be explored further by future studies, such as a significant increase in the percentage of underage draw and scratch card buyers who are not refused their purchase. The claim made is that even though fewer young people are buying, they are buying more from shopkeepers who are known not to refuse them though there is no evidence for this in the report. Similarly, although the researchers find that problem gamblers are more likely to have played other games such as bingo, fruit machines, non-lottery instants and betting there is no evidence of a relationship between playing the National Lottery and other games, although the researchers claim that lottery problem gamblers have a problem with gambling *per se*. Finally, attention is given to parental approval but whilst this is claimed to be significantly linked to problem gambling, the study also finds that between 37% (National Lottery Draw) and 49% (fruit machines) of parents either approve or 'don't mind' their children playing these games. This is a robust study on prevalence and problematic gambling by young people in the UK whose results we can be confident in, which suggests that both gambling *per se* and problematic gambling by young people under 18 appears to have plateaued.

2.2 Comparison Between British Adults And Children (Bgps)

The British Gambling Prevalence Study, conducted by National Centre for Social Research, is the first nationally representative survey of its kind in this country and provides the foundation to an understanding of the prevalence and nature of gambling in the UK. The aim of the survey was to provide robust data on participation in gambling and the extent of problem gambling amongst those aged 16 and over. To enable a comparison with problem gambling prevalence in other countries, two screening measures were utilized: the South Oaks Gambling Screen (SOGS) and the DSM-IV. For clarity of definition, the term problem gambling is used inclusively "to refer to anyone scoring above the designated thresholds (3 or more represents a 'problem gambler' with the DSM-IV and 5 or more represents a 'problem gambler' for SOGS) on the screening instruments" (Sproston *et al.*, 2000:43) (see glossary). The term 'fruit machines' is also used inclusively in the BGPS to cover all types of gaming machines such as slots and so forth. However, no distinction was made between the category of fruit machine that was being played; for instance there was no distinction between the AWP, the SWP (or the category i.e. A,B,C,or

D) or the VGM. A random sample of 7,690 people (aged 16 and over) participated in the survey, with addresses selected from the Postcode Address File (PAF).

Sproston *et al*, 2000 found that National Lottery playing is by far the most popular gambling activity among the population as a whole and poses the least risk, with scratch cards being the next most popular activity (Sproston, *et al* 2000:4). The lowest level of participation in the National Lottery Draw are to be found in the oldest group of respondents (75+) and the youngest (16-24) respondents (table 1). Scratch cards are more popular with the youngest group. This may be due to the nature of the instant win or related to younger people's greater exposure to scratch cards in a range of retail outlets.

The BGPS provides an important developmental perspective on gambling careers and problem gambling once young people reach adulthood. Problem gambling amongst the British population as measured by SOGS reduces with age; for instance, of the 16-24 age band a recorded figure of 1.7%, (2.3% men and 1.1% women) were identified as problem gamblers, whereas in the 35-44 age band this was 0.8% (1.2% men and 0.5% women). The pattern of prevalence as measured by the DSM-IV is similar, with figures decreasing overall as age increases. This compares to the rate of 4.9% for adolescents found in 2000 by Ashworth *et al* (2000). In relation to the present review, then, it is important to note that of all age groups, the highest prevalence of problem gambling can be found in the youngest age group (12-15). These findings should be reviewed in the context of the different measures applied to adolescents and adults. In particular, scales may be measuring different underlying constructs (Hardoon and Devereinsky, 2002).

Within the past year, 20% of adult men and 8% of adult women played fruit machines. However, of the 16-24 age group, 32% played fruit machines compared to 22% of the 25-34 age group, with considerable reductions in the remaining higher age bands (Sproston, *et al.*, 2000:15). This provides strong evidence that gambling on fruit machines reduces as one gets older. Ashworth *et al* give a lifetime prevalence of 65% on fruit machine gambling for 12-15 year olds, and a past year prevalence of 55%. Thus fruit machine play is highest between 12-15.

The BGPS finds that gambling behaviour varies by gender. It suggests that in general men are more likely than women to gamble, either overall or within the past year. Looking at gender and types of activities gambled on; men are more likely to participate in eight of the eleven activities listed by the BGPS. The biggest gender difference was found for fruit machines (20% of men, and 8% of women in the 16-24 aged group play fruit machines), and football pools (13% men, 5% women). Ashworth *et. al.* (2000) do not break overall fruit machine use down in terms of gender but do find clear gender differences between participation in any lottery game (boys 17%, girls 9%).

Different age groups were attracted to different activities. The youngest age group (16-24) had the lowest level of participation in the National Lottery Draw (52%), but were most likely to purchase scratch cards (36%) and play fruit machines (32%), with 19% of this age group participating in four or more activities overall and past year gamblers aged 16-24 more likely to report participation in four or more activities (29%). Therefore there is evidence to suggest that there is a correlation between youth, frequency of gambling and range of gambling activities (Sproston, *et al* 2000: ii)⁷

⁷ There is evidence to suggest that this is also the case in relation to illicit drug use. A large scale longitudinal study of 14-19 year olds' drug and alcohol use in the north west of England found that more frequent drug users also had a wider repertoire of illicit drugs tried (Parker *et al*, 1998).

In Australia, Moore and Ohtsuka (1997) found no significant difference between adolescent and adult problem gambling prevalence and stated that their prevalence level was "in line with generally low estimates of problem gambling emanating from surveys of the general population of Australia" (Moore and Ohtsuka, 1997:228). It is interesting to note that although Australian researchers view the prevalence of problem gambling in the adult population (2.3%) as low, it is higher than British adult rates. This may be due to gambling being a more accepted part of Australian life and/or the earlier and more rapid development of both the Australian gambling industry and gambling research, whereas research has only just begun on the prevalence of problem gambling in Britain.

2.3 Comparison Of British Gambling Prevalence In Young People With International Prevalence Studies

Amongst the population aged 16 and over, the prevalence of problem gambling in Britain is 0.8% (1.3% of men and 0.5% of women). The likely number of problem gamblers in Britain is 370,000 measured by SOGS and 275,000 measured by DSM-IV. The levels of problem gambling demonstrated by the BGPS amongst adults in Britain are low in comparison to international rates. The overall prevalence of problem gambling of those who gambled in the past year ranged between 1.2% (SOGS) and 0.8% (DSM-IV). In other countries that have used similar measures, rates vary between over 2% to under 1%: Australia (2.3%), Spain (1.4%), New Zealand (1.2%) and United States (1.1%). Sweden and Norway, both at 0.6%, have lower estimates of problem gambling than Britain (Sproston, *et al.*, 2000; Gotestam and Johansson, 2003, respectively).

For young people, the only reliable British prevalence figure comes from the tracking study by Ashworth *et al* (2000) which gives a combined prevalence problem gambling rate for fruit machines and scratch cards in the population aged 12-15 of 4.9% in 2000. When undertaking cross-national comparisons it is important to bear in mind the comparability of studies (Are we comparing like with like? Are the questions the same? Do they address the same gambling medium?), and the influence of cultural context, particularly the acceptability and accessibility of gambling in different countries. In most cases it is not possible to draw direct comparisons because study methodology and cultural context varies. However, it is important to have some idea of the extent of problem gambling amongst young people in other countries against which the UK can be broadly reviewed, particularly in view of the UK's unique position in relation to legislation.

Gambling Prevalence In Young Australians

As more gambling facilities have become available in Australia, the problem of children and young people gambling has been raised. Moore and Ohtsuka (1997) aimed to assess the proliferation of youth gambling within a population who had easy access to gambling facilities. The sample of 1,017 14 to 25 year olds showed relatively low scores on the problem gamblers scale and 3% of respondents classified themselves as problem gamblers (Moore and Ohtsuka, 1997:220). They found that those aged 18 or over in their sample were significantly more likely to play poker machines, but it is legal for them to do so. In Australia the use of poker machines (British gaming machines) is illegal for under 18 year olds, but the enforcement of these laws among those a little younger is very difficult.

The lower prevalence of problem gambling rate in comparison with Britain could relate to cultural factors. Moore and Ohtsuka found that the young people involved in their study held positive values about their gambling activities, this may be in contrast to other

cultures where gambling behaviour is seen in a less positive light. This study anticipated that under reporting of problem gambling would have been found due to the fact that gambling behaviour within the young is a socially accepted norm in Australian culture. The sample was predominately working class and therefore this socio-demographic group was over represented.

Gambling Among Canadian Students

A sample of 1,320 children in fourth (age 9-10), fifth (age 10-11) and six (age 11-12) grades of schools in urban Quebec were questioned about the onset of gambling behaviour (Ladouceur *et al.*, 1994:365).

The research found that 86% of respondents had wagered money at some point in their lives (higher than the rate for British youth) and 3.4% gambled on video poker and fruit machines at least once a week. The research did not look at the percentage of problematic gamblers within the gambling sample, however they noted that overall more than 40% of respondents reported gambling once a week or more. Gambling here was defined as an activity which involved risk or chance where money was won or lost (Ladouceur *et al.*, 1994:366).

The research was conducted in a metropolitan region of Quebec and so may not be representative of the rural population. The problems of non-attendance and lack of data from those excluded from the school system means that the individuals who may be engaging in these behaviours are not included in the study and so not identified. Despite these limitations the large sample size, and research design, enhances validity of this research.

Gupta and Derevensky (1998) conducted a study which included 817 adolescent high school students in the Montreal region with an age range of between 12 and 17 years old. Data was collected by questionnaire using the screening instrument DSM-IV-J. Examining the entire sample's gambling activities during the past year, it was found that electronic gambling devices (31.8%) and games of skill (28.4%) were less popular than other gambling activities such as the lottery (52.4%) and card playing (56.2%). All the respondents in this study were under the legal age to gamble, yet 7.5% of students reported gambling in casinos. For this small minority of high school boys and girls who attended casinos, both boys and girls reported that playing slot machines was their preferred gambling activity in casinos, with 50% of their time in casinos spent playing slot machines. The percentages of those reporting gambling in casinos increased with age: the percentages being 1.6%, 3.6%, and 20.2% for students in grades 7, 9, and 11 respectively. The results of the survey indicated that 4.7% of adolescents in this sample had a significant gambling problem (Gupta and Derevensky, 1998:25-29) (roughly equivalent to the British rate).

This study reinforces the particular value of longitudinal studies of young people's gambling behaviour which allow a consideration of the decision making processes involved in initiation, experimentation, perpetuation and cessation from the use of gaming machines. Longitudinal studies also increase the validity and reliability of data with each successive sweep as issues of confidentiality, methodology and attrition can potentially be resolved. It is also possible to consider not only the relationship between initiation and recreational or problematic gambling behaviour but also the relationship between gambling and other risk taking or potentially problematic behaviour such as 'binge' drinking, illicit drug use, smoking, risky sexual practices, and absence from school,

alongside any perceived socio-cultural changes in attitudes to such behaviours by young people (eg. Parker et al, 1998).

Gambling Behaviour Of Adolescent Gamblers In Ontario

Govoni *et al* (1996) administered a SOGS-RA questionnaire to 965 high school students aged 14 to 19 years of age from three high schools in the city of Windsor, Ontario, Canada. The researchers found that problem and at risk gambling is higher among males than females and that those adolescents whose parents gambled excessively had twice the level of problem and at risk gambling than those whose parents did not gamble. The research also showed that gambling activities such as scratch tabs, pull tabs and the lottery are readily accessible to under aged adolescents (the legal age in Canada being 18 years rather than 16 as in the UK). The study showed that these types of activities are accepted as the 'norm' for adolescents and are well established by the time that young people reach high school. The aim of this research was to estimate the prevalence of problem gambling, risk factors and problem gambling behaviours, prior to the opening of the Windsor casino. This research highlighted a high level of problem gambling (8.1%) in comparison with Britain.

Monitoring Adolescent Gambling In Minnesota

A two wave study, with a 1½ year interval, was carried out on a sample of 532 Minnesota adolescents and young people aged 15-18 years old (Winters *et al*, 1995). The researchers were particularly interested in the impact that the recent introduction of a state lottery would have for those reaching the legal age for gambling, alongside the rate and type of gambling in the chosen sample. The researchers found that the rates of gambling did not change across the 1½ year interval. What they did find was that certain types of gambling activities increased in preference and some decreased.

The survey was carried out by randomly selecting 4,000 households from a state-wide telephone list. The list was compiled from high school information, state driver and voter registration records. The first wave of the study began with 702 randomly selected families believed to have adolescents in residence. The second part of the study followed 18-months later when 532 young people were resurveyed by telephone. To measure for gambling addiction the SOGS-RA plus frequency was used. Those young people identified as problem gamblers were 3.5% to 9.5% respectively (British youth fall at the lower end of this range). This study identified two groups of young people: those classed as 'legal-age youths' and those designated as 'underage youths' (those below the legal age to gamble, 18 years). The research found that for most Minnesota young people gambling is common and relatively problem-free. Over the 1½ year interval there were no significant changes with the onset of the State's heavily promoted lottery and apart from changes to type of gambling pursued, changes to rates of gambling involvement were also unchanged.

As the group matured they tended to swap gambling activities, for instance playing the lottery, video machine gambling and scratch tabs took precedence over dice games, games of personal skill and so forth. The researchers go on to describe gambling as a "common and fairly benign characteristic of the youth experience, not unlike experimentation with sex, alcohol, and other 'acting-out' behaviours" (Moore and Rosenthal, 1993, cited in Moore and Ohtsuka, 1997:208). However, there are issues that the researchers themselves highlight with regards those young people who are gambling at problem levels and also those who are deemed 'at-risk gamblers'. This study also highlights the extent to which 'underage' youths rely on parent(s) or other adult(s) to purchase lottery games on their

behalf. Again, this may suggest the 'normalisation' of gambling within much of society today, especially with regards lotteries.

The study has limitations and the researchers acknowledge this. For example, the period of 1½ years may not be long enough to observe general increases or decreases in gambling involvement and to examine whether any 'maturing out' happens, much of which may be a developmental process like other adolescent problem behaviours. This points to the need for more longitudinal, health and tracking studies, along with education and prevention strategies geared towards young peoples gambling behaviours.

Gambling And Problematic Gambling Among Norwegian Youth

Johansson and Gotestam (2003) investigated the prevalence of gambling and problem gambling in adolescents aged 12-18 years in Norway using the DSM-IV (10 criteria) with a cut off point of five for pathological gambling and three for 'at risk' of problem gambling.

The researchers bought a sample of 10,000 phone numbers to households of adults aged 37-52 years. 1913 Computer Assisted Telephone interviews were completed (response rate 45.6% since 5172 numbers were invalid). In addition a random postal sample of 3300 was obtained through the postal registry which returned 1324 questionnaires (response rate 44.6%).

82.4% of Norwegian youth had gambled in their life time and 24.9% gambled weekly (36.2% males and 13.1% females). The mean age for starting gambling was 9 years and the most frequent places of play were food stores (30.6%), large supermarkets (28.5%) and news agents (19.7%). The rate of pathological gambling in the total sample was 1.76% (2.79% males and 0.69% females). The frequency of 'at-risk' gambling was assessed at 3.56% (5.03% males and 1.83% females). This compares to a rate of 0.44% of pathological gambling amongst adult gamblers (18-30) in Norway, again reinforcing the higher rates in the adolescent population. The rates are broadly comparable to British youth for 1999 (pathological plus 'at risk' in Norway at 5.32% compared to 5.4% found by Ashworth et al (2000)) although the cut off point in Norway was 3 whilst in Britain it was 4 and the Norwegian study covered all forms of gambling (the problem gambling rate in Ashworth et al (2000) refers to lottery and fruit machine use). However, lifetime gambling rates in Norway were higher.

Prevalence Of Lottery And Scratchcard Use Amongst Adolescents in the East Midlands

Wood and Griffiths (1998) devised a questionnaire to provide data on frequencies of certain types of behaviour ranging from simple measures of gambling activity to cases of problem gambling. An adapted version of the American Psychiatric Association diagnostic criteria (DSM-IV-J, Fisher, 1993) was also incorporated into the questionnaire for the purpose of identifying potential problem gamblers. The questionnaire was administered to a total sample of 1,195 adolescents (550 male, 641 female, 4 unspecified) aged 11-15 drawn from nine secondary schools in the East Midlands area of the UK.

48% had played the national lottery and 30% had played scratch cards. 6% of the those who played were identified as problem gamblers on the National Lottery (26 male and 11 female, 3% of the overall sample) and 6% of those who played were identified as problem gamblers on scratch cards (18 males and 7 females, 2% of the overall sample). Their

findings showed that, of those who played, most adolescents participated only occasionally (64%) with 16% playing most weeks and 14% playing on a weekly basis. As regards scratch card playing, it was found that nearly half of respondents (44%) played once a month, over a quarter (27%) played more than once a month, 12% played once a week, 13% played a few times a week and 4% played every day. Of those who had played, 17% of National Lottery, and 26% of scratch card users reported having bought their tickets and cards illegally.

This study gives marginally lower rates than Ashworth et al (2000) when applied to the general population.

3. Characteristics And Motivations Of Problem Gambling Behaviour

The motivations for gaming machine play are numerous. Moore and Ohtsuka (1997) utilised a combination of the Theory of Reasoned Action (TRA); incorporating personality variables and cognitive bias variables derived from Weinstein's (1980) propositions concerning unrealistic optimism about future life events. They propose that "the two frameworks together will provide a more comprehensive model for testing predictors of gambling behaviour among adolescents" (Moore and Ohtsuka, 1997:212). The study aimed to explore the links between problem gambling and gambling frequency, and impulsiveness and venturesomeness. Gender differences in gambling behaviour and between those legally and illegally allowed to play were compared. Personality factors were found to add significantly to the prediction of problem gambling and levels of impulsiveness and venturesomeness were more pronounced in the younger group. No gender differences in extent of poker game usage were found (Moore and Ohtsuka, 1997:222).

Impulsivity may be an important feature characterising a subgroup of pathological gamblers identified as suffering from a multi-impulse personality disorder. Research to date supports the conclusion that pathological gamblers display elevated traits of impulsivity compared to the general population. A study by Gerdner and Svensson (2003) of 178 male adolescents (16 to 18 years) found that problem gambling among male adolescents was not only related to personality but that lifestyle was also a factor. However, unlike the Moore and Ohtsuka (1997) study, Gerdner and Svensson (2003) found that impulsiveness was not related to gambling and that gamblers themselves are asocial rather than impulsive (Gerdner and Svensson, 2003:182). Dickerson (1996:153) states that availability is a crucial factor in the initial state of a person's choice of form of gambling. Dickerson also believes it is unlikely that regular loss of control arises from habit, but from an interaction between learning and negative moods such as depression and frustration.

If gambling becomes a lifestyle then language, behaviours and identities will be found at the gaming machine. Prus (2004) states that the more embedded within this lifestyle an individual becomes, the more likely they will use the viewpoints or practices of the group as reference points for their own behaviour. There is no evidence to support this theory of a gambling lifestyle, however it is important to remember that although for wider society those identified as deviants or delinquents may be shunned, in other social circles these identities may represent status or prestige (Prus, 2004). Such identities develop over time and with experience. It is important to remember that children and young people engaging in risk taking behaviours are often positively regarded by their peers as such behaviours are seen to be heroic and brave (Opie and Opie, 1969 cited in Poulin, 2000:62).

Derevensky and Gupta (2004) state that their wealth of research experience has led them to believe that for adolescents who are categorised as problem gamblers, it is not the money which is the main reason for playing: "money is used as the vehicle that enables them to continue playing". The main reasons for play were excitement and enjoyment. This suggests that a sophisticated research methodology which allowed a comparison of gambling behaviour between different types of gaming machines (AWP, SWP and VGM) in the UK might prove fruitful.

Research also claims that pathological gamblers and social gamblers play for different reasons. It has been suggested that social gamblers play for fun, to be with their friends or family, to win money and for the excitement (Griffiths, 2000; Fisher, 1993). Pathological gamblers on the other hand appear to play to become absorbed in the game and to escape the stresses of life (Peele, 1990; Griffiths, 2000). Derevensky and Gupta (2004) state that problem gamblers sometimes display dissociative behaviours such as escaping into another world, often with altered egos. This suggests that some gamblers may be motivated to use gambling as a form of coping mechanism or self medication to maximise the pleasures and minimise the stresses of life, much as can occur with other forms of self medication. However, these are items measured by the various gambling scales and thus finding association is therefore to be expected.

3.1 The Effects Of Modelling And Experience On Young Children's Persistence At A Gambling Game

Tremblay *et al.* (1998) conducted a study to discover what motivations initiate gambling behaviour in children. They used a game involving repeated opportunities to select a coloured chip from a container whilst blindfolded. They sampled 51 male and 51 female kindergarten children who were given instructions on how to play and were then either shown a videotaped model to win or lose or were just allowed to play without the video. They found that the children playing for tangible incentives (sweets or money) elected to play for longer than those children who had no incentives (Tremblay *et al.*, 1998:193). Furthermore those who had witnessed the winning confederate or combination initiated significantly more risks than those who had witnessed the losing confederate (Tremblay *et al.*, 1998:196).

The participants demonstrated little attachment to the money they were gambling. Dimes appeared to lack value relative to sweets for this age group and after the first set of data collection the researchers decided to change the money for sweets. Under this condition, they observed a "substantial decrease in the number of trials participants chose to play" (Tremblay *et al.*, 1998:203). These results did not follow those predicted by the social learning theory, even though participants were significantly more effective at maximising their currency winnings the second time they played the game. This study highlights the way that children attribute value to items. The fact that the participants gambled away their money, but were more cautious about losing their sweets demonstrates both that gambling behaviour can occur in childhood and that it can be strategic. The participants obviously both understood and reduced their risk taking behaviour when an incentive which they felt was valuable (sweets) was at stake. This research promotes the understanding that gambling can be an aspect of life for all age groups within society, and more importantly, that the experience of loss can be a learning experience which itself leads individuals to minimise their future losses and reduce their gambling behaviour. Although it does not directly link into the debate surrounding gaming machines and young people, it is relevant in order to understand children's and young people's interaction with games of chance, perceptions of winning and losing, and the implications of these

experiences for future risk taking behaviour. The value of money to problem gamblers is not measured in problem gambling scales.

Although many researchers claim there is a strong causal connection between early onset and problem gambling behaviour, this study demonstrates the potential normalcy of gambling games for children. It should be noted that whilst Griffiths (1995) states that early onset and early experiences of a "big win" are 'risk factors' for adolescent gambling addiction (cited in Tremblay *et al.*, 1998:194), early gambling behaviour in this case promoted responsible behaviour. The children in this study demonstrated caution when asked whether they wanted to risk losing their valued incentive. The study has a clear and robust experimental design and internal validity is strong.

3.2 Acquisition, Development And Maintenance Of Fruit Machine Gambling In Adolescence

Griffiths (1995) conducted face-to-face interviews with 50 adolescent fruit machine players, using a questionnaire to establish the acquisition, development and maintenance of their gambling behaviour. His study found that nine of the 50 participants were deemed to be pathological gamblers, using the DSM-III-R criteria. Although the levels of pathological gambling in this study were found to be relatively high (4.5%), this may be due to the research methodology. Griffiths' sample came from an amusement arcade in Exeter and his sample was representative neither of the general population nor of fruit machine users. He found that those defined as pathological gamblers started playing fruit machines earlier than those who were not classified as pathological gamblers. The mean age of onset for the pathological gamblers was 9.2 years and for the non-pathological gamblers was 11.3 years (Griffiths, 1995:199). This data suggests that early onset is linked to problem gambling. The conclusions Griffiths has made from this research, however, must be seen within the context of the very small, targeted sample.

3.3 Demographics

Slot machines are the most popular and most available form of adolescent gambling (Fisher and Balding, 1998 cited in Griffiths and Wood, 2000). Studies show that boys play on slot machines more than girls and that "very few female adolescents have gambling problems on slot machines" (Griffiths and Wood, 2000: 205). These claims could suggest that the gendered nature of gambling may increase due to social, economic, cultural and environmental factors during the transition from childhood to adulthood. This would require further research.

In relation to age of onset, Gupta and Derevensky (1998) found that the mean age of onset of gambling behaviour for their entire sample of adolescent high school students in Montreal was 11.5 years. However, those identified as pathological gamblers had a lower mean age of onset of gambling behaviour at 10.9 years. The study also found that 'pathological gambling' was higher in grade 7 (age 12-13) than grade 11 (16-17) students and that this was consistent with other studies, suggesting that adolescents may 'grow out' of gambling problems as they mature. There are several possible explanations offered that could account for this apparent decrease such as differences in exposure to gambling between different age groups (i.e. cohort effect versus maturation). It could be suggested that early onset gambling may lead to early onset pathological gambling, but early onset may also lead to an early move to moderation. There is no robust longitudinal study to provide evidence to support these claims although the tracking survey and the BGPS both provide evidence to support cohort and maturation decreases, respectively.

An analysis of young people's gambling in North America by Jacobs (2000) found that the first gambling experience reported by older adults, aged 46-70 and older, did not occur until their early to late twenties. However, the average age of onset reported by 30-45 year old groups occurred around 15-18 years of age. Studies of younger age groups reported the age of onset for first gambling to be between 11 and 13 years of age with a median age of 12. However, Jacobs argues that the 'maturation' theory (Shaffer and Jones, 1989 cited in Gupta and Derevensky, 1998:338) will be challenged as gambling broadens in prevalence and social acceptability, possibly across a broader age band. (Jacobs, 2000:143).

The Responsible Gambling Council in Ontario (RCCO) and the Canadian Centre for Substance Abuse state that young people aged 18-24 years old have higher prevalence rates of moderate to severe gambling behaviour in comparison to 25-36 year olds, yet the levels of gambling participation by these two groups is virtually identical (85.6% and 85.2% respectively). They found that certain aspects, for example motivation and perceived benefits of gambling, changed as individuals got older. For instance, the younger group was more likely to see gambling as an opportunity to socialise and relieve boredom than the older group (25-34). This could be linked to life changes such as marriage and employment as the older group was more likely to be married and in full time employment. Younger people also perceived stress to be a bigger factor than the older group, but very few used gambling as a pain reliever: 1.6% of the younger group and 1.2% of the older group (RCCO, 2001-2002).

Winters *et al.* (1993) conducted a telephone survey of 702 Minnesota youths aged 15-18 years of age looking at experiences of gambling and psychosocial risk status. The results show that those adolescents who were classified as problem gamblers were more likely to be male, have parents who gamble, use illicit drugs regularly, have poor to no academic grades and have a history of delinquency. Contrary to other research, Winters *et al.* (1993) found that there was no significant association between psychosocial factors such as family composition (two parent versus single parent households), family closeness (close versus not close), physical health, employment status (employed versus unemployed), and personal weekly income (low versus middle versus high).

The disclosure rate of illegal activity was found to be lower in the telephone sample when compared with the same questionnaire administered to an in-school sample of Minnesota youth in grades 10-12 using pencil and paper. This lower reporting of illegal behaviour could be explained by the chosen methodology. The confidentiality of telephone surveys is questionable especially when participants are children and young people, as parents or other family members may be present. Due to the sample being limited by ethnicity and targeted design, as well as the telephone methodology, we are moderately confident in this research. The sample did, however, evenly cover variables of age, gender and locality.

3.4 Addiction

The accepted understanding of problem gambling as a personal affliction or condition is questioned when gambling is taken to be "situated, career, fascinated and persistent instances of activity" within a socially constructed context (Prus, 2004). The ways in which behaviours are co-produced by a combination of an individual's interactions and his/her environment must be examined and their motives for doing so thoroughly understood. In contrast, addiction is generally researched as a unilateral construct of individual behaviour.

Stanton Peele (1985) believes that activities such as gambling, which may be viewed as addiction, have come to be treated as a disease. Peele believes that our conventional idea of addiction – that an activity or substance produces a compulsion that is beyond self-control – only “convinces people of their vulnerability” (Peele, 1985:xii). Peele (1985:xii) argues that we need to look less at science for answers and more at the rationale of cultural concepts about motivation and behaviour in order to convince people of the “benefits of health and positive experience”. For Peele, addiction should be understood as an adaptation to one’s environment; no biological mechanisms create addiction nor can biological indicators detect addiction. Compulsive, excessive or problematic behaviour is more usefully understood as a complex relationship between the environment in which the activity occurs, the characteristics of the individual and the experience.

Stanton Peele takes a distinctly non-medical approach to addiction that is best understood by examining an individual’s relationship with his/her world. This view of addiction is as a general pattern or spectrum of behaviour ranging from unproblematic to problematic that nearly everyone experiences to varying degrees at one time or another. In this sense ‘addiction’ or compulsive behaviour is neither unusual nor a clinical condition, although it can grow to overwhelming and life-defeating dimensions in some instances. According to Peele, “addiction is a way of coping with life, of artificially attaining feelings and rewards people feel they cannot achieve in any other way – it is no more a treatable medical problem than is unemployment, lack of coping skills, or degraded communities and despairing lives. The only remedy for addiction is for more people to have the resources, values and environments necessary for living productive lives” (Peele, 1990:157).

Both recreational and problem gamblers can be understood to be living out a pattern of behaviour distinct to their particular life experiences. It may be helpful in future research to explore understandings of problem gambling in order to establish a body of evidence to contrast dynamic scientific and medical models. However, gambling research appears to suggest two distinct groups of gamblers rather than a spectrum of gambling behaviour ranging from unproblematic to problematic. This is in direct contrast to alcohol and drugs research which is moving away from notions of distinct groups, one of which has addictive/problematic/compulsive behaviour problems. These groups may be artefacts of the scientific design and selected focus of studies on particular variables such as personality, motivation and so forth. Peele (1985) warns us about this kind of diagnostic over enthusiasm or pathologising where science inadvertently renders us powerless to our ‘illnesses’, where one is considered to either have a ‘disease’ or not.

Jim Orford (2001) proposes the developmental theory of addiction, and specifically relates this perspective to problem gambling behaviour, suggesting that an understanding of problematic gambling is central to an understanding of addiction or ‘excessive appetite’ in general. Orford argues that it is vital that we understand that addiction is not simply the property of drugs or machines, but it in fact a much more complex phenomena. “This is because, like alcohol, the penetration of gambling into human social life is deep and long standing... its potential for excess has long been recognized and is not in dispute. What is strange is why it has been consigned to a peripheral position in the addiction field in modern times. It offers the biggest challenge to the conventional wisdom on the subject, and arguably the greatest opportunity for development of a comprehensive understanding of addiction” (Orford, 2001:3). Orford (2001) developed a *social-behavioural-cognitive-moral* model of addiction, which revolves around the notion that individuals develop obsessive behavioural cycles which they then mature out of. This model may be supported by empirical data on the possible inverse relationship between age and gambling in adulthood.

Schaffer (1999) states that the most common conceptual error committed by clinicians, researchers and policy makers is to think that addiction resides as a latent property of an object (in this case a game of chance). Conventional wisdom, for example, refers to 'addictive gambling'. However, Schaffer suggests that addiction is not the product of a substance, game or technology, though each of these things has the capacity to influence human experience. Firstly it is the relationship between the individual and the gaming machine that defines the addiction, the machine cannot cause addictive behaviour patterns. Secondly, it is the influence of psychological, social and biological forces that determine the gambling behaviour. Experience is seen as the 'currency' of addiction with addiction the description of the relationship between organism and objects within their environment; it is not simply the result of the attributes of an object such as a gaming machine. Consequently, it is suggested by Schaffer that the causes of addiction are multi-factorial (1999). If this is the case then increased or decreased opportunities for gambling or specific changes to gaming machines will not in themselves affect prevalence of problem gambling in a simple and linear fashion.

4. Environment

The broader environment, attitudes towards gambling, access and availability will all influence young people's gambling activity. The first stage of Cornish's (1978) model of gambling is gambling as a leisure activity (cited in Dickerson, 1996:157). Dickerson notes that the usual motivations for leisure time activities such as sociability, entertainment, excitement and the possibility of winning money cannot be applied to fruit machines unless these machines are available (1996:158). This availability is obviously crucial to an individual's choice to start this form of gambling in the first place and therefore the numbers of young fruit machine players will be in part linked to the availability and legality of gaming machines. Ide-Smith and Lea (1988, cited in Ladouceur *et al.*, 1994:364) found that in England slot machines were the preferred choice (81%) of teenage youths. These numbers may just reflect the availability of the legal gambling games rather than the appealing, problematic or addictive nature of slot machines. However, the lack of availability of legal machines for under 18 year olds in other countries does not mean that adolescents will not participate in informal gambling behaviours as prevalence studies in Australia, Canada, Norway, Spain and the United States have demonstrated.

Ladouceur (1995:361) conducted research with 122 subjects between the ages of 13 and 19 sampled from an arcade. He found a significant relationship between pathological gambling and the frequency of visits to the arcade but his study was flawed at a number of levels. His sample was small and his selection process biased. He found that the frequency of gambling and arcade visits were correlated with other problem behaviours like school non-attendance and illicit drug consumption but he did not attempt to explore the nature of this relationship (Ladouceur, 1995:364).

Griffiths (2000) states that external factors can influence the adolescent gambler, such as stake size, a 'near miss', sound effects, accessibility, type and location of gambling establishment, and advertising, but that these structural characteristics cannot alone influence gambling behaviour. Griffiths also lists possible 'signs' which may alert a parent/carer that a child/adolescent is having gambling problems such as personality changes, money missing from home, selling possessions, lack of concentration, 'couldn't care less' attitude and so forth. He points out, however, that these signs can equally be applied to other problematic behaviours such as excessive alcohol or illicit drug use (Griffiths, 2000).

4.1 Familial Influences

Eisen *et al.* (1998) conducted research examining vulnerability to pathological gambling. Their experiment focussed upon the pathological and environmental factors of risk using a sample of 3,359 members of the Vietnam Era Twin Registry (Eisen *et al.*, 1998:1375). The researchers utilised the definition of pathological gambling from the Diagnostic and Statistical Manual of Mental Disorders, Version III Revised (DSM-III-R), being "the chronic and progressive failure to resist impulses to gamble, and gambling behaviour that compromises, disrupts or damages personal, family or vocational pursuits" (Eisen *et al.*, 1998:1375-6). Familial factors in this research related to "inherited factors and/or experiences shared by twin siblings during childhood" (Eisen *et al.*, 1998:1375).

The research concluded that although both environmental and physiological factors influence the risk of pathological gambling behaviour, it was the environmental rather than the physiological factors which predisposed certain individuals. They found that Mono-Zygote twins had higher pair-wise concordance rates for each symptom of pathological gambling on the DSM-III-R symptom register. They concluded, "familial factors explained 56% ... of the report of three or more symptoms (DSM-III-R criteria for pathological gambling disorder)" (Eisen *et al.*, 1998:1375).

This study was conducted with a narrowly defined sample group but the nationwide coverage and large sample size increase validity. The 3,359 respondent pairs were sampled from across the United States. However, all respondents were male and middle aged (a mean age of 41.9 years). Of the 5,150 pairs that were contacted about the study only 3,359 were later included. This significant number of non-response pairs may have biased the results.

All participants were male, the representation of ethnic minorities was minimal and the use of nine symptoms on the DSM criteria is in contrast to many other studies which use lower cut-off points. However, this research is potentially relevant to the debate surrounding children and young people's problem gambling behaviour as it indicates that familial factors can have an influence upon pathological gambling behaviour.

A second study by Gupta and Derevensky (1997) conducted in Montreal, involved 477 children aged 9 to 14 years old who completed a questionnaire inquiring about their gambling activities (Gupta and Derevensky, 1997:179). Results show that 86% of children who gamble regularly reported gambling with family members. This research is important in showing that gambling is an activity which is socially acceptable and that children's gambling may be sanctioned, facilitated or even encouraged by older family members.

The research found that levels of gambling at home were constant across the different year groups, but that gambling at a friend's house became a more popular activity with the older participants. As the age of the children increased, their ability to obtain money also seemed to increase through raised allowances, employment or larger monetary gifts. The older participants borrowed less money to gamble than those in lower age groups (Gupta and Derevensky, 1997:187).

Gambling is obviously perceived to be an acceptable behaviour for adolescents by many parents as the fear of being caught decreased between the ages of 9 and 14. The study supports the notion that early onset of gambling behaviour is influenced by familial gambling patterns of gambling activity (Gupta and Derevensky, 1997:190).

Spanish research points to a recurrent theme throughout much national and international research: that males are more likely to be problem and pathological gamblers and slot machines are the most attractive form of gambling. It also claims that machine gambling is especially addictive to adolescents. The authors state that different factors may contribute to the development of problem gambling in young people. The theory is that because Spanish families visit bars and cafeterias and the parents gamble with their children, then it creates a very powerful message to young people. There is a social acceptance in Spain which sees parents showing their children how to play the gaming machines, therefore, according to Becoña (1995), it would be difficult to prohibit under age gambling when there is such a strong familial influence steeped in Spanish family traditions.

Ashworth et al (2000) found that parental approval of gambling activity in young people decreased between 1997 and 2000. For example, 37% thought their parents approved or 'didn't mind' about young people playing the Lottery Draw, as compared with 41% the previous year. The reported changes in parental attitudes are consistent with a fall in the percentage of parents purchasing tickets on behalf of children. Past week players were significantly more likely to say their parents approved of young people playing the game that they had played (fruit machines, lottery draw or scratch cards) than non-players. For example, 22% of fruit machine players said their parents approved of young people playing, as compared with 8% of non game players.

There would appear to be, therefore, a strong correlation between parental approval and young people's gambling. Much of the research has a problem focus suggesting that parental approval may be linked to pathological gambling. We could find no evidence of research that probes the relationship between parental approval and the development of responsible play yet studies do show that a large proportion of parents condone their children's gambling behaviour; significantly more parents than those of problem gamblers. In addition, most studies of parental approval depend on the respondent's self assessment of this (usually the young person), so it is not clear how far parents do, in fact, agree.

4.2 Audio-Visual Stimulation

The lure of characteristics like the artwork and sound effects may also influence gambling behaviour. Popular imagery is used such as cartoons, soap operas and game shows emblazoned in bright enticing colours, deliberately designed to seduce players into a rhythm of repetitive, continuous play, carried along with a stream of noise and light in what Reith (1999:107) describes as a "heady atmosphere". The "structural characteristics of slot machines are designed to induce the player to play and/or continue play" (Griffiths and Wood, 2000: 205). The belly panel of the machine gives the name of the game and the nature of the artwork is important. Manufacturers' research has demonstrated that the art work fine-tunes the attraction of a particular machine to a player (Dickerson, 1996). Furthermore, Fisher (1993:446 cited in Reith, 1999:108) considers that "amusement arcades ... provide an important leisure environment for school age and unemployed youngsters". Arcades are one of few cultural spaces where young people are free to engage in adolescent behaviour with minimal supervision and rules. They can mix with their peers, explore their identities in an adult-free environment and create their own physical and social space. Within these spaces, the gaming machines themselves and the games played on them may be essential to their function as a source of group identity, status and a focus for group interactions.

Arcades incorporate flashing lights, contemporary interior decoration and popular music and so are particularly attractive to children and young people. Therefore any research

looking into the time spent in arcades must be careful to assess the time spent playing games as separate from the time spent socialising or just 'hanging around' in arcades (Fisher, 1992:265).

The sound of falling coins into the machines' metal trays or loud buzzes and ever increasing beeps add to the atmosphere of the arcade. White (1989, cited in Fisher and Griffiths, 1995:243) states that the flashing lights and sound effects of gaming machines give the players a "constant impression of fun and activity". Griffiths' study of 50 adolescent gamblers found that 30% of those interviewed claimed the aura of the machine was one of the most attractive features of play (cited in Fisher and Griffiths, 1995:243).

While the marketing arms of gambling and lottery corporations (in the United States and Canada) are not meant to gear their advertisements towards children and young people, they nevertheless use sophisticated and alluring advertisements which may be attractive to under 18 year olds (Derevensky and Gupta, 2004). Despite the lack of advertisement for gaming machines in the UK, the design of gaming machines and the characters displayed on their front panels are attractive to children and young people.

An analogy can be drawn here with concerns about the beverage alcohol industry and on-license retail trade in relation to the regulation of the manufacture, marketing and sale of alcoholic beverages to young people under 18. With the development of high strength alcoholic beverages and the redesign of pubs into city centre dance bars and café bars and the consequent increased sessional alcohol consumption in the UK (Measham, 1996), attention has turned to alcohol packaging, labelling, advertising and imagery with the suggestion that alcohol products have used imagery inappropriate to their over 18 customer base to entice young drinkers to consume their products (Brain and Parker, 1997). This has led to a voluntary code of conduct being adopted by the beverage alcohol industry watchdog, the Portman Group, and periodic pressure for certain products to be withdrawn from the market which are considered to use imagery which is appealing to under 18s (Measham, 2004a; Measham, 2004b).

5. Offending Behaviour

According to GamCare, Blackpool Youth Offending Team have identified 20% of their caseload to be suffering negative consequences resulting from gambling dependency. The Youth Justice Board, however, has no policy for including gambling dependency within initial assessment of young people, so the scale of the problem is unknown. Because young people experience multiple dependencies, gambling is least likely to be identified due to lack of awareness. Youth Offending Team assessments with young people are a potentially important avenue to investigate and assess the nature and extent of gambling problems with young people under the age of 18 (www.gamcare.org.uk).

For instance, using Blackpool as an example, the gambling related problems identified by the Youth Offending Team might not only relate to the use of gaming machines, but also to their widespread distribution in the Blackpool area, which leads them to be a focus for acquisitive crime by young people (for example, breaking into machines to steal money to finance alcohol, illicit drugs or a wider lifestyle). A one year study carried out by Yeoman and Griffiths (1996) involving 1,851 juvenile offenders from Plymouth produced evidence to suggest that 4% of juvenile crime was associated with gaming machines. The young people ranged in age between 8 and 16 (67 males aged 8-16 and 5 females aged 13-16). Of the total sample researched (1,851), 72 (3.9%) cases were identified as having some

association between the recorded offence and gaming machines, with 62 of them (86%) involving acquisitive crime, five (7%) involved missing persons, four (5.5%) involved criminal damage and one case of domestic dispute. What the research was unable to highlight was how many of those young people identified were (a) stealing directly to support gambling dependency, (b) stealing and using the money to gamble as an afterthought, (c) breaking into the gaming machines to support more gambling, to use for other reasons (e.g. illicit drugs, alcohol), to have the money to finance a wider lifestyle (trying to reclaim money put in the machine) or were they simply damaging machines as a gratuitous act of mischief making? Other reasons given for a young person's relationship with crime and gambling per se were strained family associations and possible drug problems. However, the survey had limited family background details, therefore the evidence provides no more than possible reasons that need further investigation. This leads us to the conclusion that there are wider problems related to the existence and location of gaming machines for children and young people under 18 years of age than simply problematic gambling.

6. Small Scale Related Studies

6.1 Brief Communications: Scratchcard Gambling Among Adolescent Males

Griffiths' (2000) study examined scratch card usage among a group of adolescent males. A total of 204 boys from two secondary schools were administered a questionnaire on their scratch card gambling behaviour. Ten classes (five in each school) took part in the survey with one class from each year selected at random by the head teacher. Within each class almost all the boys took part. Forty-two per cent of the sample had bought their own scratch cards since their introduction. Twelve per cent of the boys who reported having purchased scratch cards met the criteria for pathological gambling on scratch cards (returning four or more affirmative answers on the questionnaire) using an adapted version of the DSM-IV. A significant relationship was found between parents buying scratch cards and boys' scratch card purchasing (Griffiths, 2000:79).

Griffiths reported having identified a significant number of respondents who displayed traits of pathological gambling as measured on the adapted DSM-IV criteria. 38% of those surveyed aged under sixteen reported having bought scratch cards, meaning that almost two in five children in the sample had done so illegally. Forty-nine per cent purchased scratch cards occasionally, and four per cent reported buying them on an almost daily basis. Of the 55% of children identified as having bought scratch cards (n=112 of the sample of 204), 46.5% reported spending no more than £1 during the course of a typical week, 44% spent £2-£5, 6% spent between £6 and £15, and 3.5% reported having spent more than £15. Griffiths identified ten children (5% of the starting sample, 12% of the sample identified as scratch card purchasers) as having met the DSM-IV criteria for pathological gambling on scratch cards. Thirty-seven children (18% of the original sample, and 43% of the sample identified as scratch card purchasers) displayed between one and three of the symptoms of pathological gambling. It was also found that 19% of the sample showed no symptoms at all (Griffiths, 2002).

Whilst the findings of Griffiths (2002) are concerning, it should be noted that his methodology is problematic in several ways. Firstly, his survey was carried out in "a particularly deprived area of Birmingham" (Griffiths 2002:84), thus there is an overrepresentation of lower socio-economic groups in his sample and the findings may not reflect the gambling behaviour of the British adolescent population in general. Secondly, the ethnic diversity of the sample was not representative of the general

adolescent population with 90% of the children being from Afro-Caribbean or Asian origin, thus ethnic, cultural and religious differences may be of relevance. Thirdly, it should be noted that Griffiths carried out his research in all-male schools which could affect the findings. Boys who choose, or whose parents choose single sex secondary schooling may not be representative of the general population. Furthermore, the research environment may be affected by an all-male atmosphere with issues of bravado possibly coming into play when filling in the questionnaires. As Derevensky *et al* (1996:62) note, "children who engage in risk-taking behaviours are positively regarded by their peers, since such activities are viewed as acts of bravery". Fourthly, this was a small study conducted by one of Griffiths' undergraduate students in a specific area with a specific socio-cultural demographic, and given that the findings are so different from other studies, we cannot be confident in the findings of this piece of research.

6.2 Adolescent Participation In The Uk National Lottery Games

Pugh and Webley (2000) conducted a study to ascertain the prevalence of illegal participation in two UK National Lottery games (an on-line game and scratch cards) by young people under sixteen. Their sample consisted of 256 young people aged between 13 and 15, drawn from four mixed gender comprehensive schools and colleges which served "city, town, rural and coastal catchment areas in the county of Devon, UK" (Pugh and Webley, 2000:1). The children completed a questionnaire in a controlled environment within their respective schools and colleges. Pugh and Webley's findings indicated that 56% of the sample had participated in the National Lottery on-line game, whilst 54% had used National Lottery scratch cards. Regression analysis revealed that the strongest predictors of participation in the on-line game were income, household participation, whether the television show (the National Lottery live draw) was watched and whether the participants had ever been refused by a retailer when attempting to purchase a lottery ticket. The same variables (minus watching the television show) were the best predictors of buying scratch cards (Pugh and Webley, 2000).

Pugh and Webley report all 256 questionnaires as being filled out to a very high standard with none being discarded and only a few cases of questionnaires returning with multiple entries made for the same question. Their sample consisted of 124 boys and 132 girls. The young people were 13 to 15 years of age with 35% (n=90) coming from school year 9 and therefore predominantly aged 13-14; 32% (n=82) from school year 10 and predominantly aged 14-15; and 33% (n=84) from school year 11 and predominantly aged 15-16. Of the sample, 71% of the boys and 60% of the girls stated their weekly expenditure on games of chance. Of the male sample it was found that 24% of their weekly disposable income (£3.39 per week) was spent on games of chance, and for females 19% (£2.60 per week) of their disposable income. Over half of the whole sample of those who participated in games of chance (56%) reported that they had played the National Lottery on-line game at some point in the previous 10 months. One hundred and thirty-seven respondents (54% of the whole sample/of those who played games of chance) had participated at some point in the past six months in National Lottery *Instants* scratch cards. Pugh and Webley (like Griffiths, 2000) found that household participation in the National Lottery games was high. It was found that 89% of the households of the young people surveyed (n=227) participated in National Lottery games on a weekly basis. Of these, 2% played *Instants* only, 35% played the on-line game only, 52% played both games, and 11% played neither. Pugh and Webley report that "the majority (n=18) of those children from the 29 households who do not play either game also did not participate at all" (Pugh and Webley, 2000:7). Whilst Pugh and Webley concede that the most common form of gambling for adolescents is arcade machines they state that regular participation in such

forms of gambling is relatively low whilst National Lottery games have a middling overall participation rate, making them the most popular form of gambling. This, they believe, "makes the (illegal) participation in the National Lottery by adolescents potentially very important as it is likely both to shift their attitudes towards gambling and in some cases, lead to problem gambling" (Pugh and Webley, 2000). What is not clear from this research, however, is the extent to which the lottery is qualitatively different from, or similar to, other forms of gambling in terms of social acceptance, entertainment, widespread participation and endorsement by parents and government.

As Pugh and Webley (2000) do not employ screening tools and rely on a relatively small targeted sample (in this case school children in Devon) their findings pose some concerns as regards validity. The research was carried out a relatively short time after the launch of the National Lottery on-line draw and the introduction of *Instants* scratch cards (10 months, and 6 months, respectively) thus the novelty value of participation in both games should be taken into consideration when interpreting these findings, given that Ashworth et al (2000) find lottery use has declined.

6.3 The Acquisition, Development And Maintenance Of Lottery And Scratchcard Gambling In Adolescence

The Woods and Griffiths (1998) study investigated psychosocial effects of gambling by adolescents on the National Lottery and instant scratch cards. Using the information emanating from a self-report questionnaire, a large numbers of adolescents were found to be taking part in these activities. Woods and Griffiths identify a significant link between parental involvement in the National Lottery and children gambling, with "most lottery tickets and scratch cards being bought for the adolescents by their parents" (1998:265). Their results showed that nearly a quarter of the participants believed that they would win large amounts of money on the National Lottery or scratch cards (21% and 25% respectively) and that they did not perceive such involvement as participating in gambling.

Wood and Griffiths state that "of the participants who took part in these activities, most had had their lottery tickets/scratch cards bought for them by their parents (National Lottery 71%; scratch cards 57%)" (Wood and Griffiths, 1998:268). They believe that the number of parents who buy lottery tickets and scratch cards for their children is a cause for concern as "studies of other forms of gambling have shown strong links between parental and child gambling, and have indicated that the earlier children begin to gamble, the more likely they are to become problem gamblers in the future" (Wood and Griffiths, 1998:270). This comment shows presumed rather than proven links both between parental and children's gambling, and between lottery behaviour and other forms of gambling by Wood and Griffiths and therefore needs to be treated with caution. A further concern in this study comes from the fact that whilst it claims to have identified a correlation between parental and children's gambling activities it relied on third-party assessment of parental involvement in National Lottery/scratch cards by the school children themselves.

6.4 Adolescent Accounts Of The UK National Lottery And Scratchcards: An Analysis Using Q-Sorts

Wood et al (2002) conducted a study to examine adolescents' accounts of the National Lottery and scratch cards. Wood et al argue that "to fully understand why adolescents take part in these activities it is important to consider the diverse ways that adolescents

represent these activities" (2002:161). The researchers employed Q-sorts (similar to semi-structured interviews in that the participants' responses are rated on a scale according to the extent to which they agree or disagree with the statements that they are given) to examine the opinions of 62 participants aged between 11 and 15. Their findings identified four distinct accounts with regards to the National Lottery: moral opposition, luck seeking, rationalist, and uncertainty; and identified four distinct accounts in relation to scratch cards: including scepticism, thrill-seeking, rationalist, and libertarian. This suggests that adolescent perspectives vary for the lottery and scratch cards. The researchers point out that some of the accounts described the lottery and scratch cards as 'bona fide' forms of gambling; some were pessimistic about their chances of winning significant amounts of money, while others displayed misconceptions relating to their belief in luck and chance. Furthermore they suggest that these differing adolescent representations will have consequences for measures aimed at reducing, preventing, or treating adolescent gambling and need to be considered in the design of educational materials for this age group.

6.5 Adolescent Perceptions Of The National Lottery And Scratchcards: A Qualitative Study Using Group Interviews

Wood and Griffiths (2002) conducted a study to examine in more detail adolescent perceptions of the National Lottery and scratch cards identified in a previous study (Wood, Griffiths, Derevensky and Gupta, 2002). The later study provided an opportunity for the participants to explore what they thought were the most salient issues through the use of semi-structured group interviews. Their sample consisted of thirty nine individuals in six separate groups, three groups of six adolescents and three groups of seven adolescents with an age range of 11-15 years. Their results revealed themes including entertainment value, the dream of winning, and the personal excitement of participation, along with an awareness of social problems. For many of the children interviewed the national lottery draw was primarily a social activity enjoyed with family members which leads Griffiths to argue that social cognitive theory (Bandura 1986) provides a "plausible explanation" for the development of gambling behaviour in children.

6.6 Underage Internet Gambling

Internet gambling is of particular concern, especially given the widespread and growing use of computers and the internet by children and young people up to the age of 18. The rapid expansion of home computer ownership and internet access in the UK is evident in the last few years: in the first quarter of 2004, 49% of households in the UK (12.1 million) could access the internet from home compared with just 13% (3.2 million) in the same quarter of 1999 (Source: National Statistics Omnibus Survey). For children and young people in particular, in the autumn of 2002 it was found that 98% of children and young people aged 5 to 18 used computers at home, school or elsewhere, and of young people aged 11-18, 67% used the internet (Social Trends 34, 2002). Lottery games can be played on the internet and through Sky Active. However, to prevent under 16s from registering online a system is currently in place which attempts to detect and identify valid authentication.

Current figures show that the number of 16 and 17 year olds legally registered online is 0.0039% of total players, indicating a very modest use of interactive games by young people aged 16-17 at this moment in time. Furthermore, Camelot has created a tool to minimise the risk of games being developed that would encourage problem gambling play in this group of people. This tool involves creating a robust system to prevent under 16s from registering online and the system is currently excluding 10% of all people who try to

register online because of unidentifiable evidence of age or address. Recent research into underage internet gambling suggests that this initiative is effective as regards the National Lottery. However, the same report suggests that the methods of excluding underage players are not necessarily as successful as have been claimed by other operators. The study showed that out of 37 sites investigated only seven successfully blocked underage play at point of registration. The National lottery site (www.nationallottery.co.uk) along with Ladbrokes (www.ladbrokes.com) were amongst the seven that proved to be successful (Smeaton, Poole, Chevis, and Carr, 2004).

This study looked at underage access to online gambling and betting sites. The researchers estimate that nearly 1 million young people aged 11-18 are debit card holders. This has a direct effect on the young person's access to gambling on the internet, because debit cards are a usual means to setting up an account and it is possible that this could be achieved using a stolen card or through fraudulent use of parents credit or debit cards. It was found that the majority of sites did not employ any kind of age or ID verification system. The temptation to 'play for free' that exists on many gambling sites also potentially encourages young people under the age of 18 to gamble illegally. These findings are of some concern as it is estimated that there are 1,500 internet gambling sites and betting sites currently online, thereby rapidly increasing the potential opportunities for gambling to all those under 18 year olds who use the internet.

The sites tested were the most popular sites and familiar brand names, for example www.coral.co.uk; www.skybet.co.uk; www.galacasino.co.uk; www.willhill.co.uk; www.littlewoodsgameson.co.uk. These sites are based in the UK and/or have direct connections with the UK market. The two UK sites that successfully implemented age verification systems, www.nationallottery.co.uk and www.ladbrokes.com, provide evidence that blocking potential underage gamblers is possible, and that other organisations could adopt a more active approach in the protection of children and young people.

6.7 Children's Cognitive Perceptions Of 6/49 Lottery Tickets

This study was carried out with 167 children selected from English speaking elementary schools and summer camps in the Montreal area (Herman *et al*, 1998). The children ranged in age from 7 to 14 and were selected from lower and middle socio-economic class backgrounds. Each child was given 16 pre-selected 6/49 lottery tickets and asked to rank them in order of preference. The aim of the research was to determine the cognitions used by children at different developmental stages when choosing lottery tickets. This was an interesting piece of research and revealed that younger children appeared more rational when choosing lottery tickets and did not perceive lottery ticket selection to be skill-driven. In contrast, older children believed that more strategic methods were required when selecting a lottery ticket and a greater level of skill was needed. These may be helpful findings with regard to prevention programs. For instance, it is widely reported that players' perception of skill and therefore an element of control in playing games of chance are firmly ingrained, and it may be that this sense of control or the desire for this sense of control is present in persistent gamblers (Wood and Griffiths, 1998, 2002). It has also been reported that the *age of onset* for problematic gambling in young people may occur around the ages of 10 and 11, therefore suggesting that access to gambling at this age may be of particular importance (Wynne, Smith and Jacobs, 1996).

FINDINGS

- There is a lack of substantial data relating to under 18 year olds and the prevalence of gambling and problem gambling behaviour in the UK. It is not possible at the present time to give reliable prevalence figures for lifetime gambling across childhood and problem gambling in childhood. The only large scale reliable study (the National Lottery Tracking Study, Ashworth et al, 2000) focuses primarily on lottery games though includes some general data on fruit machine play, betting games and bingo.
- There is a lack of research into patterns of adolescent participation in gambling and research on online internet gambling is almost non-existent.
- Prevalence studies applicable to young people across the world are not comparable because of varying age groups, definitions of gambling and problem gambling, and research design. Prevalence rates of problem gambling in young people range from 3% in Australia (Moore and Ohtsuka, 1997) to 8.7% in America (Winters *et al.*, 1993). A prevalence rate of 4.9% for a British sample was obtained by Ashworth et al (2000) but this only included lottery games and fruit machines.
- Problem Screening Instruments are not standardised across all studies and findings vary according to scale used and cut off points (for example, SOGS is generally thought to give a higher prevalence problem gambling rate and cut off points for DSM-IV vary from 3 to 9).
- The studies with the most rigorous design, using large national random samples and recent coverage find the lowest rates.
- Prevalence research suggests that males are significantly more at risk of gambling and problem gambling as measured by standard problem screening instruments than females.
- In addition to lack of standardisation, screening instruments are largely behavioural although there has been a recent addition of cognitive items in some scales. None of the scales incorporate sufficient contextual information to be meaningful either for young people or adults. Most scales were developed as therapeutic tools rather than epidemiological instruments.
- Early onset *may* be a characteristic of young people defined as problem gamblers by screening instruments. However, there is no clear longitudinal evidence to support this claim and changing cultural and leisure contexts must be taken into consideration.
- There is a maturation or developmental hypothesis that children 'grow out' of and/or learn cautiousness and moderation in gambling and problematic gambling as they mature, but more research is needed to validate this.
- There are potential factors, which may predispose a child or young person to become a problem gambler - heavy parental gambling, delinquency, regular illicit drug use, and average-to-below school grades - but no direct causal relationship has been reliably established.
- There is also evidence to suggest that several potentially problematic or illicit behaviours which cluster (such as illicit drugs, early drinking and offending) are not atypical during contemporary adolescence and may be associated with but are not necessarily factors which cause problem gambling.
- Three studies provide specific evidence of under age lottery and scratch card use in England and Wales (Ashworth et al, 2000; Pugh and Webley, 2000; Wood and Griffiths, 1998). Only one study (Ashworth et al, 2000) can be generalised to the current population of young people and this finds that past year prevalence in 2000 was 26% for the Lottery Draw and 36% for scratch cards.
- Lower rates are found in national studies and higher rates are found in smaller local samples (East Midlands and Devon). Data collected in the late 1990s shows higher

rates than data collected more recently, suggesting a decline in lottery and scratch card use by adolescents, mirroring that found in the adult population.

- There is no evidence to suggest that the majority of under 16 year olds who (illegally) participate in the National Lottery are adversely affected, although the majority of adolescents recognise the potential dangers of addiction, overspending and debt (Ashworth *et al* 2000).
- There is evidence to suggest that lottery and scratch card use changes over time. The largest UK study of under age lottery and scratch card activity (Ashworth *et al* 2000) found that these forms of gambling appear to be declining with this age group since they were first introduced.
- The majority of children can access online gambling sites. The National Lottery and Ladbrokes have designed and implemented effective tools for the purpose of blocking access to on-line games by those not meeting the legal age requirements. However, the majority of sites do not have effective screening and blocking technology.
- There is no strong evidence to support the suggestion that the National Lottery is a 'gateway' to other 'hard' forms of gambling. Young problem gamblers are more likely to play other games e.g. non-lottery instant, bingo and betting. There is no evidence to support the relationship between playing National Lottery and other games, for example, whether one form of gambling precedes and/or facilitates another. Some researchers claim that lottery problem gamblers have a problem with gambling *per se* (Ashworth *et al*, 2000) but this is through data on association rather than causality.
- There is no evidence of pools competitions causing problematic behaviours but research in this area could not be found.
- Motivations for children for lottery and scratch card use may differ between adults and children. Older children appear to believe that strategic methods are required and that a greater level of skill is needed to select tickets than younger children. Children report believing they will win large amounts of money.
- There is an increase in the percentage of underage draw and scratch card buyers who are not being refused their purchase by shopkeepers.
- Many studies suggest that gambling behaviour in young people is linked to parental attitudes and behaviour but the nature of this link is unclear. It is unlikely that there is straightforward link between parental approval and lottery or scratch card use as the majority of parents of problem gamblers are reported by their children not to approve and a proportion of young social gamblers also report parental approval.
- Levels of gambling and problem gambling appear to decrease with age. For instance, Sproston *et al* (2000) found that of the 16-24 age band 1.7%, (2.3% men and 1.1% women) were identified as problem gamblers, whereas in the 35-44 age band this was 0.8% (1.2% men and 0.5% women). The pattern of prevalence as measured by the DSM-IV is similar, with figures decreasing overall as age increases. This compares to the rate of 4.9% for adolescents found in 2000 by Ashworth *et al* (2000).

CONCLUSIONS

Although many research studies claim to demonstrate an association or relationship between young gamblers and the onset of problem gambling behaviour, current evidence suggests that the proposed causal relationship has become assumed to be true rather than proven with valid evidence. Although gambling behaviour by children and young people under 18 is a growing area of research and comment, the field remains in its infancy. Little is known about the gambling norms of young people (Moore and Ohtsuka, 1997:210), especially relating to problematic play. Yet many researchers claim that certain individuals will develop a "chronic incapacity to resist the temptation to gamble" (Ladouceur, 1995:361).

Levels of problem gambling are a hotly debated topic. Some research studies claim that 4-7% of adolescents gamble at a pathological level (Tremblay *et al.*, 1998:194) whilst other studies have found that between 5 and 6 per cent of the adolescent population meet criteria for problem gambling. This is almost double the number found within some adult populations (Ladouceur, 1995:362). The available evidence does suggest that in all countries gambling and problem gambling is inversely related to age with a higher prevalence of gambling behaviour in adolescent populations.

A focus on variables such as educational attainment, gender, class, or attitudes may detract from the behaviour and action under observation (Prus, 2004). There is very little data about actual gambling behaviour, for instance time spent playing, money spent, where money comes from, number of machines used and so forth. This basic data is crucial to aid understanding of gambling and problem gambling behaviour.

If gambling is understood to be an activity then research must focus upon the fact that it is "community enabled, situated, career, fascinated and an emotionally engaging activity" (Prus, 2004). It is essential to have an understanding of any type of behaviour that is deemed to be 'problematic' by the wider population within the community in which it occurs. At the same time, it is crucial to remember that the majority of children and young people who gamble do so without developing any significant gambling-related problems (Derevensky and Gupta, 2004) and that gambling is a normal pastime for a significant minority of many families.

Children and young people's problem behaviours are a blossoming arena of academic research and public debate. The introduction of the 1998 Crime and Disorder Act brought much tighter legislation to the policing of childhood and youth, and yet we remain one of the few countries in the world that allow children and young people to gamble without knowing the full effects of this behaviour. Britain has no age restrictions on certain types of gaming machine gambling and according to Moody (1989) has increasing numbers of young people seeking out help from Gamblers Anonymous (cited in Tremblay *et al.*, 1998:194) yet there is very little research on therapeutic help for young people.

Evidence is required to improve understanding about gambling settings; whether the opportunity to 'gamble' provides the attraction or whether gambling venues merely act as a convenient and congenial meeting place due to lack of alternatives for children and young people under 18 years old.

Much of the criticism to which gaming machine play has been subjected has occurred due to a variety of undesirable consequences which are likely to arise in a small minority of cases and problematic gambling behaviour only appears as a consequence of far higher involvement. It should not be forgotten amidst all the debate of the potential dangers of

gaming machine play, that gambling has become such a successful pastime because many people enjoy it (Cornish, 1978:257). The assumption that gambling is intrinsically worthless (if not morally reprehensible) and bad for people has invested with it a peculiarly unglamorous social disapproval. This has given little impetus to the investigation of any positive value such behaviour might have, for example as a form of controlled exhilaration, as a stress/coping mechanism and also in developing responsible adult gambling.

The debate surrounding the possible relationship between gaming machine play and problem gambling has been carried out without adequate discussion about what comprises an addiction to gambling for a young person. It has been undertaken without there being an agreed empirically based definition or measure of pathological gambling in young people and so research which claims to prove or disprove a causal relationship lacks common objectivity (Fisher, 1992:265). Scales require development and clarity of purpose (Collins, 2003). Instruments for therapeutic use may not be appropriate as epidemiological tools to measure prevalence. Recent developments in cognitive measurement show some promise but prevalence scales must have some way of measuring behaviour in context. There are considerable situational differences between players which affect their 'problem gambler' status. For example, a very rich person who is preoccupied with gambling and needs to gamble with increasing amounts of money in order to achieve the desired excitement would immediately score on the DSM-IV. As would a child who is forbidden to play by his parents and so must lie even for one go at a fruit machine.

Education and prevention programmes aim to increase awareness and knowledge, changing inappropriate beliefs or misconceptions of control in games of chance, change attitudes and teach successful coping and adaptive skills, therefore modify behaviours, encourage people to seek out professional help and so reduce social costs and increase quality of life (Ladouceur *et al.*, 2000:103). In Britain there are few of these programmes designed to limit damage to health by promoting prevention. Many governments and organisations have implemented programmes to address this need for proactive prevention. For example, 'Careplay'⁸ in Switzerland and Jellinek Consultancy⁹ in the Netherlands.

Finally, there is no research evidence to suggest that levels of participation in, or rates of prevalence of problem gambling among, young people is associated with particular types of regulatory regime. Studies from across the world, in a variety of legislations, all find that gambling is a prevalent and popular activity amongst the young. In particular, there is insufficient research to make fine distinctions between age limits such as 16 or 18. Research on young people's lottery use shows that it is generally reducing without legislative change, although there is evidence to suggest that some young people are finding it easier to buy tickets from certain suppliers.

⁸ Incorporates school campaigns, staff trained in gambling addiction, leaflet distribution for assessing gambling profiles, addresses of counselling units and so forth (www.admin.ch/bag-).

⁹ Encourage treatment for gambling problems by training casino dealers to spot compulsive gamblers (www.thewager.org.backindex/vol3pdf/w3222.pdf).

RESEARCH RECOMMENDATIONS

- **A gambling tracking study should continue to provide data on prevalence and be expanded to include data on aspects of play across the range of gambling behaviour.** The National Lottery is a relatively 'young' form of gambling therefore it is essential that prevalence studies are carried out at regular intervals. The National Lottery tracking survey should be expanded to cover the whole of the United Kingdom, distinguish between socio-economic groups and should include top-up samples for minority groups and 'hard to reach' populations such as children not in mainstream education. It should also probe gender differences in play in more detail. Screening instruments and techniques (e.g. decision of question inclusion as a screening tool) should be selected following a rigorous validation study (see below);
- **Measures to prevent under age gambling need regular and independent monitoring.** For example, the six key elements that Camelot have put in place to ensure lottery games meet the objectives set out by the Government to prevent excessive participation and underage play. These six key elements are: Operation Child, responsible market strategies, organisation and structure, game assessment, and education and research (www.gamcare.org.uk).
- **Longitudinal studies involving a large national sample of children and young people are required** to give evidence of the nature, extent of gambling behaviour in young people, and the links between behaviours and events in childhood and later problem gambling. Longitudinal research will be important to track changes of any negative impact that playing lotteries may have on young people over time for instance, tracing childhood/adolescent gambling behaviour to adulthood gambling behaviour, gambling careers, and the move to problematic behaviour and back would advance a fuller understanding of the development of this behaviour. These studies should produce data that can provide information in context and enable discrimination between variables. For example, they should take account of several known context relevant variables such as gender, ethnicity, socio-economic group, other problematic behaviour, income, education, attitudes towards money, parental attitudes and others such as self esteem and health and be trans-national and carried out simultaneously.

There is a possibility that the group of children and young people who might most benefit from preventative programmes are not being reached in the research due to lack of parental consent. Any prevalence studies must be sure to gather data from the hard to reach groups of children and young people who may have slipped through the school system. Different sampling methods must be used in order to include groups such as the homeless, young offenders, prisoners, and those in institutions or hospitals;

- **Validation studies of screening instruments** for problem gambling that are sensitive and specific for use with adolescents involved in lottery, scratch card and other forms of gambling are urgently required. There needs to be a consensus of opinion in relation to what cut-off points are used in research studies in order for information to be useful and comparable. Development or refinement of current instruments used to assess adolescent gambling severity is required on an international scale. Rigorous validation of existing measures like the DSM-IV-J and SOGS-RA is problematic due to a lack of treatment centres for children displaying problem gambling behaviour from which a validation sample can be taken (Fisher, 1995:308). A scale validation study, extending Derevensky and Gupta's (2000) Canadian study, should be undertaken. This

scale could then be adopted in future UK and international studies to enable comparison over time, place and context.

- **Increase research into 'switching' i.e. moving from 'soft' to 'hard' gambling and the relationship between different gambling behaviours.** This could be incorporated into the design of longitudinal studies and also be supported by qualitative and quantitative studies of smaller samples of young problem gamblers identified through the tracking study who give their consent to further research. Retrospective research, both qualitative and quantitative, could be conducted with identified adult pathological gamblers regarding issues pertaining to 'onset', length of gambling career, and desistance as well as related social issues;
- **Research carried out on participation in football pools by adolescents.** Samples could be drawn from adult football pool players who have children living in the same household with matched controls where no adult plays the pools. This would add further to evidence on the links between parent and child gambling behaviour;
- **More research is required on parental attitudes to under age gambling and the perceived links between lottery and other gambling.** Much of our knowledge in this area relies on the reports of children and young people. An additional set of questions on parental attitudes to gambling, gambling behaviour of children, whether the lottery or scratch cards are viewed as gambling and what is considered problem gambling could be added to an omnibus survey (e.g. the general household survey). Alternatively, a specific study on parental attitudes could be commissioned which could contrast parental attitudes with children's perceptions of their attitudes to enable appraisal of the validity of third party reports relied upon in the majority of current and previous studies.
- **Research is needed into effective strategies for prevention at a primary, secondary and tertiary level.** The development of peer research methodologies that might probe youth gambling behaviour more effectively could be used in conjunction with adult methodologies. This also has implications for education and treatment and could mirror effective peer education public health campaigns in the areas of HIV, drugs, safe sex and so forth
- **How addictive is gambling for young people?** The critique of addiction theory (eg. Orford, 2000; Peele, 2001) needs to be thoroughly researched and evidence collated as to its validity. It is of importance to the understanding of gambling behaviour and also to the future treatment and help provided for those who problem gamble. Due to the medical and positivist nature of much current research in this area it is essential that research be carried out into this area, where problem gambling behaviour is understood through a non-medical perspective. A sub-sample of young people with problem gambling behaviour (identified through a longitudinal study) could become the subjects of a dedicated addiction study that would be designed to test the different hypotheses of addiction in relation to gambling behaviour.
- **How do current social support systems assess and respond to problem gambling behaviour in young people?** Problem gambling could be included in routine assessment systems such as those carried out by Youth Offending Teams, Connexions, Children's Centres, Children's Fund services and agencies associated with the Common Assessment Framework. Following the RIGT review on therapeutic services, a review of services for young people in the UK with gambling problems may be relevant to

establish the main therapeutic resources applied to this population. This would identify practices rather than published research.

GLOSSARY OF TERMS

Addiction: The classical medical or disease model of addiction identifies a pharmacological and/or psychological dependence to a substance or behaviour which results in withdrawal or craving if decreased and/or increased tolerance if continued. Since the 1980s, critiques of addiction have challenged the classical model and suggested that excessive, compulsive or problematic behaviour may result from a wide range of substances or behaviours and that also such consumption or behaviour is possible without problematic or compulsive outcomes (Gossop, 1982; Peele, 1985; Orford, 1985; Booth Davies, 1992).

CPGI: The Canadian Problem Gambling Index (CPGI) (Ferris and Harold, 2001) is a new instrument for the measurement of problem gambling in general population surveys. Compared to SOGS and DSM-IV, the CPGI includes more indicators of the social and environmental context of problem gambling.

Children and young people under 18 years of age: As there is continued debate surrounding the many terms applied to under 18 year olds, we have opted to use 'children and young people' inclusively to cover all ages and stages of a young person's development.

Daily Play: Random drawing of 7 numbers from the numbers 1 to 27. Overall odds of winning any prize are 7.4/1

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, Version IV (1994). The American Psychiatric Association created these criteria by modelling them upon those in use to identify psychoactive substance dependence. They therefore are based on the assumption that problem gambling is an addiction similar to other addictions. DSM-IV has also been applied in sample surveys to identify problem and pathological gamblers. Like SOGS there are a number of variants of DSM-IV, each designed to identify problem gamblers in particular sub populations.

DSM-IV-J: Adaptation of Diagnostic and Statistical Manual of Mental Disorders for measuring levels of pathological gambling in juveniles (Fisher, 1993).

Euro Millions: Draw tickets cost two euros (approximately £1.50) and give players in the UK, France and Spain a slim chance of winning a huge jackpot: the average jackpot is £14 million. Draw takes place on Friday evenings. There are 12 prize levels and players win something for matching three or more numbers. The odds of winning any prize are 24/1; the odds of winning the big prizes are 76,275,360/1.

GA20 (Gambling Anonymous Twenty Questions): These twenty questions are offered to anyone who may have a gambling problem. They are provided to help the individual decide if (s)he is a problem gambler. If an individual answers yes to seven or more of the questions it is suggested that they may have a gambling problem.

Gaming machines: This includes fruit machines, slot machines, video gaming machines, one-armed bandits and poker machines. Coin operated gaming machines fall into three categories – amusement with prize machines (AWP), skill with prize machines (SWP) and video game machines.

1. *Amusement with prize machines (AWP)* - There are two types, the fruit machine and the jackpot machine. Fruit machines are category D gaming machines and legal for all children and young people under the age of 18. Category D has a maximum stake of 30p and a maximum prize of £5 cash or £8 in tokens. Jackpot machines are categories A-C and have a higher stake and bigger cash prize, located in casinos, bingo halls and clubs. Jackpot machines have a maximum stake of 50p and a maximum prize of £1000 in casinos, £500 in bingo halls and £250 in clubs. All cash machines have a maximum stake of 30p and a maximum prize of £25, these machines are found in arcades, bingo halls, pubs and betting shops (Gambling Review Report, 6.1).

2. *Skill with prize machines (SWP)* - (Sometimes known as a trivia machines). These offer games consisting of a pre-programmed set of general knowledge questions. These machines require a 10p and 20p stake and there is no financial prize or gift, just the prize of a free play.

3. *Video gaming machines (VGM)* - These machines offer no financial winnings, they are activated by inserting a low stake of 10p or 20p and the player may be awarded with free plays.

Hard Gambling: Hard gambling is a colloquialism for those forms of gambling which are considered to carry greater potential risk or gambling problems than others, usually because of the high stake or rapid continuous play associated with them (Home Office, 1996:3).

Illegal Sales: This refers to the sale of National Lottery, scratch cards and football pools competitions to young people under the age of 16 years in the UK. This age restriction applies when participating in the same activities via the internet or interactive television.

Lottery: A chance numbers game where the customer has to select the winning numbers drawn. Prizes are a percentage of total stakes. If the top prize is not won then the prize money that would have been paid out in the event of a win is added to the prize pool for the next draw (jackpotted). Lotteries are sometimes used to raise money for charity (www.GamCare.org.uk).

Lotto Hotpicks: Wednesday and Saturday draws. Pick 4 numbers, odds are 14,126/1 and prize value is £7,000. Pick 2 numbers, odds are 79/1 and the prize value is £4.

Lotto 6/49: Played throughout Canada with the draw occurring on a Wednesday and Saturday. Minimum top prize of \$1 million - 6 numbers drawn from 1-49, ticket price \$2.

MAGS : The Massachusetts Gambling Screen is a brief clinical screening instrument that can provide an index of pathological and non-pathological gambling by short survey or interview and also documents the psychometric translation of the proposed DSM-IV pathological gambling criteria into a set of survey or clinical interview questions (Shaffer *et al.*, 1994:340).

National Lottery Draw: The odds of matching all 6 numbers on the main National Lottery Draw are 13,983,816/1; 5 numbers are 54,200.84/1; 4 numbers are 1,032.40/1; 3 numbers are 56.66/1.

National Lottery Scratch cards: Sold in a variety of outlets: supermarkets, news agents, petrol stations, post offices and small retailers. The objective of the game is to find 3 like

amounts to win that amount. Tickets cost £1-£2 each. The typical odds of winning are between 3/1 and 6/1.

Online Gambling: Use of a computer and telephone connection allows individuals to participate in many forms of gambling – lottery, casino, bingo, etc - 24 hours a day from home on the internet. A gambling account can be set up on-line and payment is usually by means of a debit or credit card. There are now an estimated 1,700 gambling websites on the Internet. As well as the Internet it is possible to gamble through interactive television and mobile phones (www.gamcare.org.uk)

Operation Child: Operation Child is one of the approaches Camelot uses to help prevent underage sales. Operation Child is a programme of awareness training for retailers and their staff to prevent underage sales to under 16s.

Pachinko: A Japanese gaming machine requiring no skill – combination of a pinball machine and a slot machine.

Problem Gambling: Gambling in an impaired control way. This may compromise, disrupt or damage family, personal, or recreational pursuits (Lesieur & Rosenthal, 1991). Problem gambling covers a range of complex behaviours from less severe to more extreme cases, and is not simply a matter of excessive expenditure on gambling, although that may be the most obvious result.

Problem Gambling Screen: This is an index of behaviours or psychological states known to be correlated with problem gambling.

SOGS: The South Oaks Gambling Screen is a questionnaire originally developed by Lesieur and Blume to identify people with pathological gambling problems amongst those already receiving treatment for substance abuse. Since its initial implementation SOGS has been applied in random sample based surveys to identify pathological gamblers in the general population. A number of versions of SOGS have been drawn up, each designed to identify problem gamblers in particular sub populations.

Thunderball: Random draw of 5 numbers from 34 and 1 number (the Thunderball) from 14. To match 5 numbers and the Thunderball, the odds are 3,895,584/1 with a prize value of £250,000.

TRA: Theory of Reasoned Action postulates relationships between engaging in behaviour and attitudes towards it, knowledge about the likely outcomes and intentions to carrying out this behaviour (Moore and Ohtsuka, 1997).

VGS: Victoria Gambling Screen developed by Tovim, Esterman and Tolchard, (2001). Contains 22 questions about gambling behaviour and includes 5 questions specifically related to the respondent's partner.

Established threshold for British Prevalence Gambling Survey:

1. **SOGS:** threshold used for identifying a problem gambler is 5 as advocated by the Australian Productivity Commission report as the most appropriate cut-off point developed by Lesieur and Blume (1987) as a screen for compulsive gambling.
2. **DSM-IV:** threshold used for identifying a problem gambler is 3 as advocated by the American Psychiatric Association and Lesieur and Rosenthal (1991).

Note: Not all surveys use the same cut-off points – some use 3 to 4 to indicate a problem gambler and 5 or more to indicate a probable pathological gambler or by contrast can be as high as 10 (SOGS). The DSM-IV has an additional threshold that is used in some surveys to identify probable pathological gamblers, or severe problem gamblers with a score of 5 or more.

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TABLE OF STUDIES

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Ashworth, J., Doyle, N., Howat, N., (2000)	DSM-IV-MR-J Cut-off 4 or more (out of 9) to be classified as a problem gambler.	Anonymous Self-completion questionnaire	11,581 School pupils 12-15 yrs M51% F48%	Representative Sample of 131 schools (NFER register, 50% response rate)	England and Wales	12-15 years	Decrease in young people playing National lottery, Thunderball and buying scratchcards since 1997. 1.7% classified as problem gamblers on instants in 2000 (2.3% in 1997). Watching lottery also decreased (28% in 2000 & 38% in 1999). Boys more likely to be problem gamblers than girls. Problem players participate in other gambling games.	Moderate Confidence: Large sample. Limits include sample coverage, only England & Wales, excluded special schools and children outside mainstream schooling. Minority groups (including PGs) too small to draw conclusions, uses DSM-IV-J.
Creigh-Tyte, S., & Lepper, J., (2004)	N/A	Questionnaire	2945 Adults	Random sample using PAF	Britain	Adults 18 and over	Lottery play similar for men and women. Modal age for lottery play 45-54 & for S/C is 16-24. NL play has reduced since 1999.	Confident but does not discriminate between 16-18 & 16-24 yr olds.
DeFuentes-Merillas, L., Koeter, M. W. J., Schippers, G. M. and van den Brink, W. (2002)	SOGS – those with a cut-off score of 3 or more were interviewed with gambling section of the DSM-IV Diagnostic Interview schedule (DIS-T)	Questionnaire and interview	3342 Scratch card buyers	Random sample Individuals buying lottery scratchcards	Netherlands	Adults	Scratchcards have very low addiction potential in the Netherlands. Identified 'unique' pathological scratchcard gamblers as mainly women between 25-34 years who spend very little money	High Confidence: Robust design but not representative of young people.
DeFuentes-Merillas, <i>et al</i> (2004)	SOGS cut off +3 DSM-IV	Questionnaire & Interview	201 Scratch card buyers	Follow up sample of PGs from stratified random sample	Netherlands	Adults	Of the PG S/C group earlier identified (2002) 6.72% (95% CI 2.30-8.90%) became addicted to scratchcards during the following two year period.	High Confidence: Robust design but not representative of young people.

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Eisen, Lin, Lyons, Scherrer, Griffith, True, Goldberg and Tsuang, 1998.	DSM-III-R	Telephone interview in own homes.	6718 members of the Vietnam Era Twin Registry. Sample initially limited to male twins who served in Vietnam, then to those who were alive and fulfilled initial survey criteria.	Familial factors.	USA	33 to 53 years,	Inherited factors explain between 35% and 54% of the liability for the five individual symptoms of pathological gambling behaviour. Familial factors explain 56% of the report of three or more symptoms of pathological gambling and 62% of the diagnosis of pathological gambling disorder. Familial factors have an important influence on risk for pathological gambling behaviour	Low confidence: Telephone methodology. Biased sample due to gender, age, criteria of selection and availability. Assumed environmental factors were shared.
Fabian, 1995.	DSM-III	Interviews.	437 gamblers. 54 self-help groups.	Self selected.	Germany	Mean age 31 years.	Majority slot machine gamblers. SM gamblers younger than classical gamblers. CGs' gambling more extensive. Emotional intensity similar for 2 groups. For young people, SM gambling as stimulating & dangerous as CG.	Moderate confidence: All males. All self-confessed problem gamblers. No age range given.
Fisher, 1992.	DSM-IV-J Cut off point Path G \geq 4 Prob G=3	Questionnaire survey & interviews.	460 school children. One school in seaside town South West England.	Time spent playing. Universal sample of secondary school children in study location.	South West England.	11 – 16 years.	6% Pathological gamblers significantly involved in dependency behaviours, 62% reported gambling on fruit machines. DSM-IV-J is advance in pathological gambling discrimination in children.	Moderate confidence: not representative of general child population - context seaside town.
Govoni et al (1996)	SOGS-RA cut off \geq 5 – problem gambler & 3 or 4 – at risk gambler.	SOGS-RA questionnaire	965 high school students aged 14-19 years of age	Targeted sample of high school students recruited from three geographically separated high schools.	Ontario, Canada	14-19 years	Lottery related games appealed to both sexes. Gambling is highly pervasive in the area, and well established by time adolescents reach high school.	Moderate confidence. Does not break down the various gambling activities by risk severity

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Griffiths, 1990.	DSM-III-R Cut off not stated	Informal dialogue.	1 m 1 f	Case study. Gaming took place in arcades on fruit machines. Informal meeting place.	Seaside town.	18 & not given for female	Chasing, near miss, sound effects, family distress, played alone personality changes (rebelliousness). More research needed to confirm existence of depressive mood states before gambling, critical factor in success is wanting to stop.	Low confidence: one case study so limited sample.
Griffiths, 1990.	DSM-III-R Cut off not stated	Face-to-face interview questionnaire.	50 adolescents. 39 m 11 f Targeted sample.	Big win early in gaming career.	Amusement arcade. Exeter.	Mean age of sample 16.2 years.	9 male pathological gamblers. Early onset for pathological gamblers (9.2 years). High levels of pathological gambling. Sustained by psychological & physiological variables.	Low confidence: targeted sampling. Biased results.
Griffiths (2000)	DSM-IV Cut off not stated	Questionnaire	204 school pupils in two secondary schools (males only)	Targeted Sample	Birmingham England	11-16	42% of the target sample had bought scratchcards 12% of which met an adapted version of the DSM-IV criteria for pathological gambling	Low confidence: targeted sampling, strong ethnic minority bias. Cut off point not stated. No female participation in experiment
Gotestam, K. G., and Johansson, A., 2003.	DSM-IV Cut off-5 or more Path G; 3 or 4 at risk; all gamblers 3 or more as problematic	Questionnaire.	Representative sample of Norwegian population. Household. 2014 individuals.		Norway.	18 years+	The prevalence of problematic gambling was 0.60%. However, this is the first study so prevalence may be under-represented.	Low confidence: no under 18 year olds, low response rate. Good initial data collection.
Gupta & Derevensky, 1997.		Questionnaire.	477 children. Three middle class, public English elementary schools and two secondary schools in Montreal.	Schools were randomly selected from those agreeing to participate in the study. Only children with parental permission were included in the sample.	Canada.	9 to 14 years.	86% who gamble regularly gamble with family. 81% of sample had gambled, and of this group 52% reported gambling once a week or more. Gambling is a socially acceptable behaviour.	Moderate confidence: well designed research with clear data validating conclusions. Biased sample, limited by consent and middle-class sample.

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Gupta and Derevensky 1998	DSM-IV-J Cut off 3+	Questionnaire	817 high school students 417 male 400 female	5 high schools, 3 grades	Montreal Canada	12-17	Finds support for Jacob's Addiction Theory. Pathological gambling found for 8%, regular gamblers 21%. Occasional gamblers 51% and non-gamblers 20%	Moderate confidence: Not clear whether 9 criteria or 12 questions were used plus low cut off point.
Hendriks, V. M., Meerkerk, G., Van Ores, H. A. M. and Garretsen, H. F. L., 1997.	SOGS	Questionnaire and face-to-face interview.	4497 individuals, 59.6% male. Random sample	On the street outside a lottery vending station.	Netherlands.	14 – 83 years.	4.1% classed as at-risk. Poor socio-economic background, negative playing motivation, heavily involved in other forms of gambling, use marijuana and excessive alcohol use. At-risk players were more likely to have come from poor socio-economic backgrounds, to be heavily involved in other forms of gambling.	Moderate confidence: large sample size, higher proportion male, large age range lack of defined relationship between factors.
Herman, Gupta & Derevensky, (1998)	N/A	6/49 Lottery Tickets	167 children (61 f – 106 m) selected from lower to middle-class socio-economic backgrounds.	English speaking schools and summer camps	Montreal Canada	7 - 14	Younger children do not perceive lottery ticket selection to be skill-driven, older children more strategic. Implications for intervention and prevention programs.	Moderate Confidence
Johansson & Gotestam	DSM-IV Cut off 5 & 3 for PG and At risk gambling respectively	Telephone (CATI) and postal questionnaire	3237 children	Random phone numbers of population aged 37-52 (N=10,000)	Norway	12-18	Proportion never gambled was 17.6% and majority seldom gambled (57.5%). 24.9% gambled weekly. 1.76% defined as PG and 3.46% at risk. Slot machines most popular (81.8%), lotteries least popular (39.4%). Lotto ranked high compared to other players (68.7%). PG rate amongst adolescents is higher than adults (0.15%). 49.6% of frequent adolescent gamblers had no PG symptoms. More males than females gamble weekly (2.5 times more).	Confident: Large sample, two different methods of data collection, but relatively low response rate (45.2% across both samples),
Ladouceur, Dube & Bujold, 1994.		Questionnaire.	1320 students. Targeted sample - not representative: metropolitan Quebec.	Gender (males more than females) age (older gambled more often).	Quebec urban schools. Canada.	8-12 years.	86% bet money. Lotteries most popular (61%). Gambling behaviours differ with gender. More than 40% gamble once a week+ on at least 1 game. Prevention programmes should be implemented as early as the fourth grade.	High confidence: large sample biased, but useful in relation to early gambling behaviour. Reasonable conclusions made.

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Ladouceur & Dube, 1995.	SOGS Cut off-4 Problem G; 5 Path G	Questionnaire.	122 subjects. City arcades.	Targeted sample subjects found in arcades not representative of general population, over-representation of males (82.8%)..	Quebec Canada.	11-38 years.	The frequency of gambling and arcade visits are correlated with other problem behaviours such as skipping classes and drug consumption 10.7% probable pathological gamblers	Low confidence: biased sample, limited sample size, broad age range.
Moore & Ohtsuka, 1997	TRA personality variables, cognitive bias variables, adapted SOGS.	Questionnaire	1017 school and university-based adolescents	6 secondary schools, 4 university campuses, in predominantly working class area and so not representative	Western suburbs of Melbourne, Australia	14-25 year olds	Relatively low frequencies of gambling and problem gambling. Gambling is frequent, normative, & approved among the young. Can be predicted by rational decision-making model. PG 3%.	Confident: Well designed, good sample size, but over-representation of working class
Pelletier, Ladouceur, Fortin, & Ferland,(2004)	DSM-IV-MR-J	Questionnaire With assignment to experimental or control group	High School students		Quebec Canada	12-15	22% of questionnaire items misunderstood with 20% and 29.4% decrease in number of PGs observed in experimental and control group. Screening instruments could be leading to overestimation of prevalence of PG.	Confident, but similar studies needed to replicate findings.
Poulin, 2000.	SOGS-RA.	Self-report questionnaire.	13549 students. Single-stage cluster sample stratified by grade and either health region or school district or board.	In public schools in the four Atlantic provinces of Canada.	Canada.	Ages 12-13, 14-15, 15-16, 17-18 from grades 7, 9, 10 and 12. Average age of 15.2 years.	8.2% & 6.4% adolescent students met broad definition of at-risk & problem gambling respectively. 3.8% & 2.2% adolescent students met narrow definition of at-risk & problem gambling respectively. Deception about legal age eg. using fake identification or lying about one's age was found to be an independent risk factor for problem gambling.	High confidence: good sample size, well designed and administered. Clear conclusions made.

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Pugh & Webley (2000)	None	Questionnaire	256 children	Target sample	Devon England	13-15	56% of sample had participated in National Lottery on line game, and 54% had purchased scratchcards	Not confident: targeted sample in one area of Britain.
Shaffer, LaBrie, Scanalan, and Cummings, 1994.	MAGS and DSM-IV.	Screening questions from the 2 screening instruments.	856 students.	Students from 3 Boston suburban high schools, not randomly selected. 1-2% of the sample were African Americans, all students middle or upper-middle class.	Boston suburban high schools, USA.	13 to 20 years.	Using DSM-IV 96% of adolescent gamblers were correctly classified as pathological, in transition or non-pathological. Variety of social and emotional problems associated with adolescent gambling.	Moderate confidence: targeted and biased sample.
Sproston <i>et al</i> 2000.	SOGS & DSM-IV Cut off 5 & 3 Respectively – measure for problem gambling.	Self-completion questionnaire	7,680 adults	randomly selected from PAF	Britain	16+ years	National Lottery Draw has lowest prevalence of problem gambling among past year gamblers (1.2%) with next lowest being scratchcards (1.7%). Those who uniquely play National Lottery and no other activity is 0.1% (past year) Male, parent problem gambler, lower income, separated/divorced, multiple gambling all risk factors.	Confident. Conclusions limited by PAF and 16-24 age band. Certain groups of population omitted. Prevalence rates are best estimate of gambling in Britain.
Tremblay, Huffman and Drabman, 1998.		Paid task, game with video and debriefing.	102 children.	Suburban elementary school and kindergarten in a lower-middle class, mixed race neighbourhood.	USA	Kindergarten aged 5-6 and first grade aged 6-7.	Children playing for incentives played longer. Playing 1 week later, those playing for incentives exhibited more successful strategies, quit sooner and with more winnings. Children's perception of contingencies was a powerful determinant of their persistence at this gambling paradigm.	High confidence: experimental design. Small sample, biased due to neighbourhood and consent. Useful data for early gambling related behaviour.

Author(s)	Screening Tools	Research Instruments	Sample Populations	Sample Design	Area	Age	Conclusions	Confidence
Winters, K. C., Stinchfield, R. and Fulkerson, J. 1993	SOGS-RA Cut off - <u>at risk</u> gambling/week or daily G - score of 1; less than week 2+ <u>Prob G</u> week or more often- G score of 2+ or daily G regardless of score	Telephone survey.	702 individuals.	Targeted state-wide phone list of households likely to have adolescents in residence. Households in Minnesota.	USA	15 – 18 years	Adolescent gambling is a normal experience of youth, but those defined as PGs are more vulnerable to future gambling problems. Gambling reported by most of subjects, 8.7% classified as Problem Gs. School difficulties, regular drug use, delinquency, parental gambling, male.	Moderately confident: telephone methodology, limited sample, excluding certain groups. Sample predominantly white, although evenly distributed across age, gender and locality.
Winters, Stinchfield & Kim (1995)	Two sets of severity groups identified using narrow criteria - SOGS-RA: problem =4+; at risk = 2-3. PG=at least weekly gambling and 1+ SOGS-RA, or daily gambling less than weekly and 2+ SOGS-RA	Telephone questionnaire	532 adolescents and young adults	Random sample from state-wide telephone list of 4,000 households expected to have adolescents. 2-wave longitudinal study (1.5 yr interval)	Minnesota, USA	15-18	The onset of the State's high-stakes lottery did not trigger a significant increase in the rate of PG among youth. Rates of gambling involvement and pathological gambling did not change across the 1.5 year interval. However, preference for gambling activities changed, e.g. lottery & casino machines increased whereas betting on games of skill decreased.	Moderate: Interval of 1.5 years may have been too narrow to monitor significant change.
Wolfsen, S., & Briggs, P., (2002)	N/A	Questionnaire	485 respondents at lottery terminals	Targeted self-selecting: 1,000 questionnaires left by lottery terminals	2 Major Supermarkets in England	16+	38% of participants who play National Lottery were planning to play Weds draw through fear of missing a possible win with regular numbers due to 'anticipatory regret' theory. Mean age of participants –46.1 (38% male + 62% female)	Moderate: data on 'motivation' of people who play the National lottery with regular numbers.
Wood & Griffiths (	None	Interview	39 children 20M 19F	Target sample from 5 secondary schools	England	11-15	Children play the lottery to win and obtain money, and focus on the amount of money that can be won rather than the odds on winning it	Moderate confidence: target group averages just 7.8 pupils per school.